C8650-1A

OEM EDITION JUNE 15 $3 TECHNICAL PUBLISHING

SPECIAL ISSUE

THE DATAMATION 100

DATAMATION

JUNE 15, 1986/$3 U.S.A.
VOLUME 32 NUMBER 12
This issue, 195,320 copies

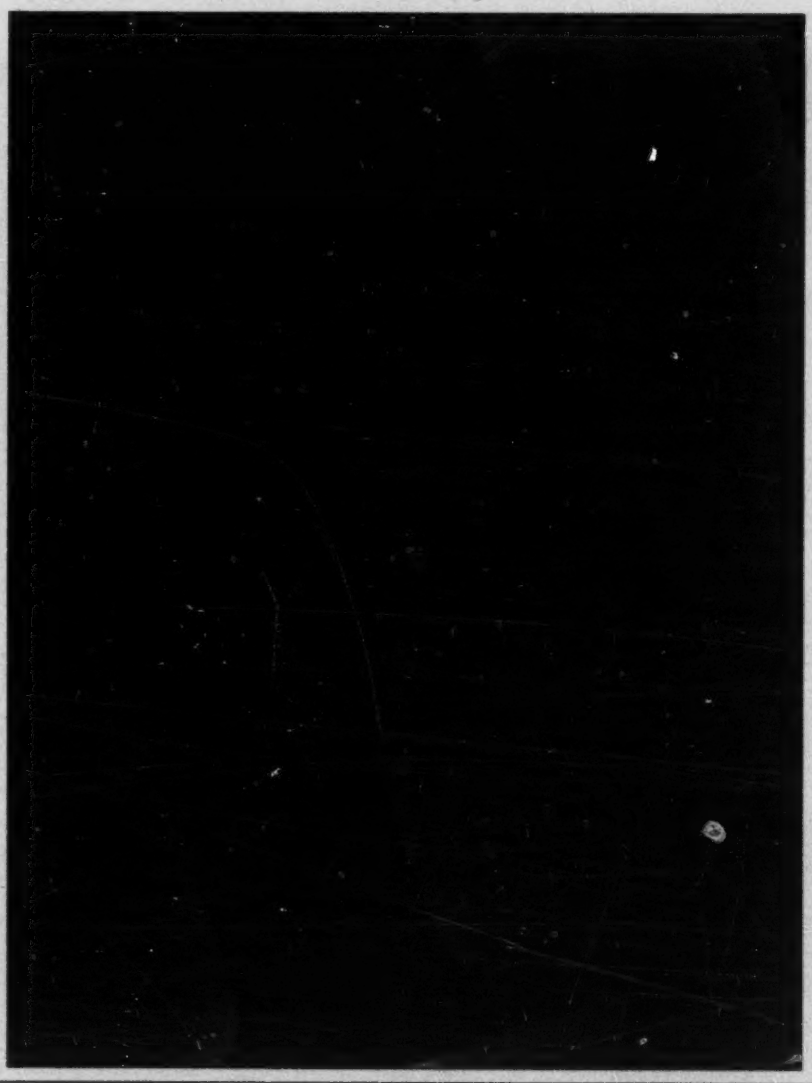
FEATURES

24
BEHIND THE NEWS
Though they fight on, the BUNCH are finding that their PCM preeminence is "A Faded Glory." A DATAMATION staff report.

42
THE DATAMATION 100
The slump in the dp industry in 1985 may have been felt in profits, but it wasn't reflected in revenues. The top 100 worldwide computer companies raked in $150.8 billion last year, up 10% from 1984.

56
RANKING OF THE TOP 100
The 18 biggest dp companies of 1984 did it again in 1985. IBM's revenues were greater than its next 12 competitors combined. Sperry ironically beat out Burroughs for third place behind second-place DEC.

66
COMPANY PROFILES
Up close and personal with the top 100 dp firms—where they they're going, where they were, and how they got there.



160
MIXED FORECASTS FOR DP
Angeline Pantages
High technology has changed industries and organizations, but when it comes to productivity, the case is unproved.

169
NCC AT THE CROSSROADS
Robert B. Forest
Is NCC too big? Does it truly cover all the industry's bases? Is it up to date? Does it reflect the real world? Conference sponsors are facing these and other questions.

DEPARTMENTS

9 **LOOK AHEAD**
15 **LETTERS**
21 **HARDCOPY**
37 **WORLDWATCH**
177 **HARDWARE**
185 **SOFTWARE**
190 **MARKETPLACE**
190 **ADVERTISERS' INDEX**

OEM SUPPLEMENT 40-1

(DOES NOT APPEAR IN ALL EDITIONS)

1 **FOREIGN AID**
9 **WHAT PRICE PIRACY?**

COVER PHOTO BY PETER ANGELO SIMON

THE DATAMATION 100

of all the companies in the DATAMATION 100. In fact, IBM's mainframe revenues alone were almost twice the size of second-place Digital Equipment Corp.'s total revenues.

Perhaps it is poetic justice that brought takeover target Sperry to one slot ahead of suitor Burroughs. In 1984, Burroughs had the third largest dp revenues, Sperry the seventh largest. Last year, inching past the company that at press time was attempting to take it over, Sperry sold $4.76 billion worth of dp goods, compared to Burroughs' $4.69 billion. To paraphrase Aretha Franklin, who's buyin' who? (see "A Faded Glory," p. 24).

Meanwhile, at the other end of the list, the company that just missed the cut-off for the DATAMATION 100 was Uccel Corp. Last year it ranked 89; this year it is first runner-up, landing at 101 with dp revenues of $204.8 million. Other companies that earned a rank in last year's 100 tumbled off this year's list, some edged out by new—particularly non-U.S.—entrants in the list, others because their sales slipped. Intel Corp., at 88 last year, is at 106 this year since its dp revenues grew only 4% to $187.2. British Petroleum Co. (Scicon), which had been at 90, is now at 103. The French firm CISI, which ranked 91 for 1984, slipped to 110 in '85. Other companies noticeable by their absence include Micom Systems, at 93 on last year's list and 104 on this year's; CPT Corp., dropping to 117 from 95; and Planning Research Corp., which moved to 102 from 99.

OTHERS THAT VANISHED

Other names have vanished from the list because they were bought by or merged with other companies. In the U.K., ICL, number 20 last year, vanished into conglomerate STC plc, number 24 this year. Dysan Corp., 81 on last year's list, is now a part of Xidex Corp., earning the new owner a rank of 69 on this year's list. Verbatim, 94 for 1984, was bought by Eastman Kodak Co., 97 in this year's ranking and a new entrant to the DATAMATION 100. Informatics General Corp. was at 83 until Sterling Software Corp. bought it out in the software industry's first hostile takeover; Sterling's purchase of Informatics also bought it a debut slot in this year's listing—number 88.

Some other companies that earned a rank in this year's list will probably be missing from next year's: among them, Volkswagen AG, number 56, which sold its biggest dp operation, Triumph Adler AG, to Olivetti, number 12; and Mitel Corp., number 76, which was bought by British Telecom plc, number 55.

FIG. 1
THE MARKETS OF THE DATAMATION 100
($ BILLIONS)

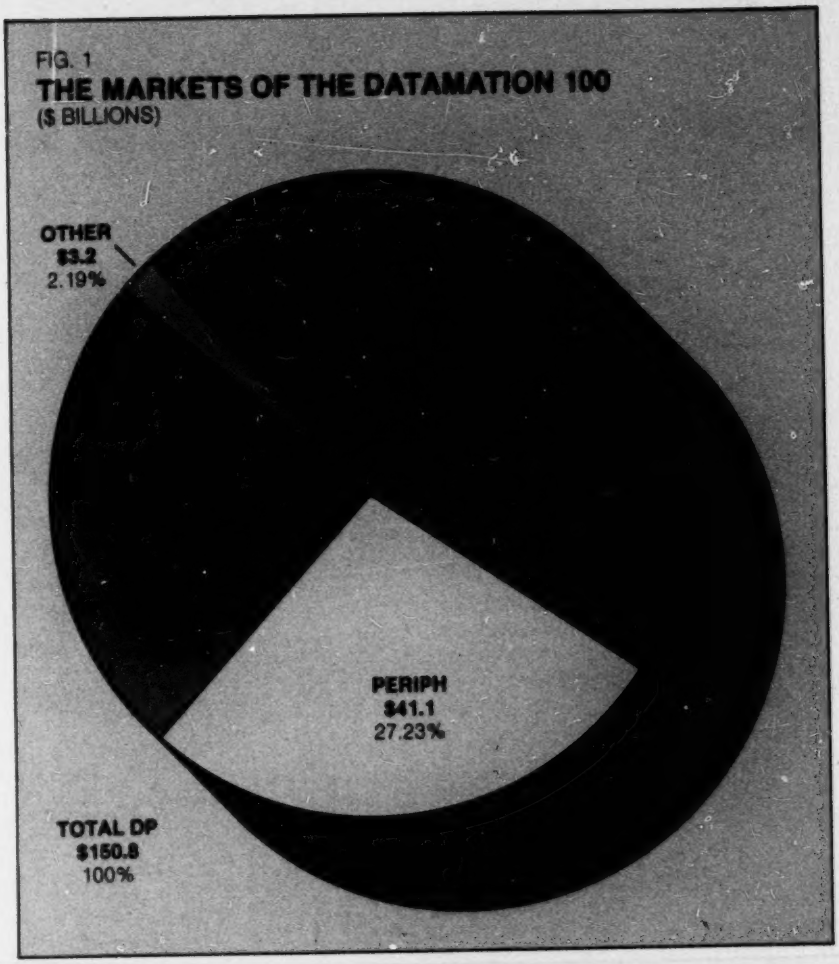


FIG. 2
THE TOP 15 COMPANIES IN MAINFRAMES

DTM 100 RANK	COMPANY	1985 ($ MIL.)	1984 ($ MIL.)	% CHANGE*
1	IBM	14,010.0	13,131.0	6.7
3	Sperry Corp.	1,890.8	1,451.1	30.3
5	Fujitsu Ltd.	1,618.6	1,535.5	5.4
7	NEC Corp.	1,216.6	1,076.6	13.0
8	Control Data Corp.	856.0	813.0	5.3
11	Hitachi Ltd.	836.8	745.3	12.3
15	Honeywell Inc.	775.0	665.0	16.5
4	Burroughs Corp.	747.3	747.3	NC
16	Groupe Bull	574.3	499.9	14.9
6	NCR Corp.	485.5	485.5	NC
35	Amdahl Corp.	434.0	400.0	8.5
10	Siemens Corp. AG	374.1	350.9	6.6
24	STC plc	370.0	362.9	2.0
62	Cray Research	332.6	200.0	66.3
46	National Semiconductor Corp.	300.0	250.0	20.0

*Percent change in dollars. In actual accounting currencies, Fujitsu's mainframe revenues were up 5.4% to ¥385.5 billion; NEC's were up 13% to ¥289.6 billion; Hitachi's were up 12.3% to ¥199.2 billion; Groupe Bull's were up 18% to FF5.1 billion; Siemen's were up 10% to DM1.1 billion; and STC plc's were up 6% to £288 million. NC: no change

FIG. 3

THE TOP 15 COMPANIES IN MINIS

DTM 100 RANK	COMPANY	1985 ($ MIL.)	1984 ($ MIL.)	% CHANGE*
1	IBM	3,500.0	3,500.0	NC
2	Digital Equipment Corp.	1,600.0	1,527.0	4.8
9	Hewlett-Packard Co.	1,050.0	950.0	10.5
13	Wang Laboratories Inc.	870.9	970.5	-10.3
28	Data General Corp.	799.7	840.0	-4.8
38	Prime Computer Inc.	563.7	479.1	17.7
48	Tandem Computers Inc.	533.1	477.1	11.7
36	Harris Corp.	470.0	410.0	14.6
5	Fujitsu Ltd.	439.0	383.9	14.4
23	Nixdorf Computer AG	407.9	340.0	20.0
3	Sperry Corp.	400.5	409.5	-2.2
4	Burroughs Corp.	400.0	400.0	NC
6	NCR Corp.	400.0	335.0	19.4
56	Volkswagen AG	366.7	314.0	16.8
12	Ing. C. Olivetti & Co. S.P.A.	348.6	394.9	-11.7

*Percent change in dollars. In actual accounting currencies, Fujitsu's mini revenues were up 14.3% to ¥104.5 billion; Nixdorf's were up 23.8% to DM1.1 billion; Volkswagen's were up 20.5% to DM 1.0 billion and Olivetti's were up 5.9% to L697.1 billion. NC: no change.

FIG. 4

THE TOP 15 COMPANIES IN MICROS

DTM 100 RANK	COMPANY	1985 ($ MIL.)	1984 ($ MIL.)	% CHANGE*
1	IBM	5,500.0	5,500.0	NC
17	Apple Computer Corp.	1,603.0	1,747.0	-8.2
12	Ing. C. Olivetti & Co. S.P.A.	884.5	496.9	78.0
27	Tandy Corp.	796.8	573.5	38.9
3	Sperry Corp.	742.8	503.4	47.6
41	Commodore International Ltd.	600.0	1,000.0	-40.0
52	Compaq Computer Corp.	503.9	329.0	53.2
9	Hewlitt-Packard Corp.	400.0	500.0	-20.0
60	Convergent Technologies Inc.	395.2	361.7	9.3
67	Zenith Electronics Corp.	352.0	249.0	41.4
7	NEC Corp.	338.6	305.1	11.0
74	Apollo Computer Corp.	295.6	215.9	36.9
20	Matsushita Electronics Corp.	270.6	278.4	-2.8
26	LM Ericsson	232.6	217.6	6.9
2	Digital Equipment Corp.	225.0	250.0	-10.0

*Percent change in dollars. In actual accounting currencies, Olivetti's micro revenues were up 113.6% to L1.7 trillion; NEC's were up 11% to ¥80.6 billion; Matsushita's were down 2.8% to ¥64.4 billion, and Ericsson's were up 11.1% to Skr2.0 billion. NC: no change.

There were some big movers on the chart—companies with a "bullet." One of them, newcomer Atlantic Computers plc, leapt to number 90 on revenues of $224.4 million; last year the U.K. leasing company was well off the list at number 127. Lotus Development Corp. moved up smartly from the bottom rung on last year's ladder; this year it is at the 89th position. Compaq proves as portable as its machines, moving up to 52 from 61; the year before last it had ranked 91.

Headed in the other direction, the notorious Storage Technology Corp. dropped to 45 from 34, down from 15 the year before last. Computervision Corp. skidded to 57 from 46, dropping below its big CAD/CAM competitor, Intergraph Corp., which rose slightly to 51 from 52.

The ebbing micro wave hurt several companies, particularly some that had hitched their stars too tightly to supplying parts to IBM. Disk drive specialist Seagate—which lost almost half of its IBM business—fell to 95 from 62. Another participant in the dangerous disk drive business also lost big last year: Tandon Corp. dropped to 81 from 53.

The top 15 microcomputer makers had mixed results. While their total market in 1985 was up a slim 4.6% over 1984—to $13.1 billion from $12.5 billion—the wealth was not evenly shared. DATMATION estimates that although IBM's micro revenues were flat, they held at a huge $5.5 billion for the year. Apple, on the other hand, lost ground, with micro revenues off about 8%. (Reorganization should help this pc pioneer in 1986, however: cost-cutting has raised its revenue per employee to $419,300, the highest in the survey for companies whose revenues are 100% dp related.) A big winner was Olivetti, its micro revenues up more than 113% when measured in the company's actual accounting currency. Tandy also did well, its Model 1000 PC clone scoring on both price and features to lead the big retailer to a 38.9% increase in micro revenues, up to $796.8 million from 1984's $573.5 million. As noted, Compaq continued to soar, with its micro revenues skyrocketing 53.2% to a robust $503.9 million in this year's listing from $329 million in last year's survey.

The biggest loser in micro revenues last year was troubled Commodore. With its early mainstays aging, and with, at best, mixed response to its Amiga pc, revenues were off a huge $400 million. Once a billion-dollar corporation, last year the company did $600 million in micro sales.

In the minicomputer market—including superminis—sales of the top 15 companies were up slightly, rising 4.3% to

$12.2 billion from 1984's $11.7 billion. And while people are heard saying that "DEC is eating IBM's lunch in minis," Big Blue still takes the cake, having sold $3.5 billion worth last year. Nevertheless, IBM's sales were flat in this market, while DEC's mini sales rose a bit more than the market, up 4.8% to $1.6 billion from $1.52 billion. The biggest loser in the top 15 was Wang, off 10.3% to $870.9 million from 1984's $970 million. Reflecting currency swings, Olivetti's mini sales were up 5.9% measured in its actual accounting currency, but down 11.7% when calculated in dollars.

Few surprises are revealed in the top 15 makers of mainframes—including supercomputers. IBM takes the top, up 6.7% over 1984's $13.1 billion, selling $14 billion in 1985. IBM alone did more than 56% of the total mainframe business booked by the top 15 companies in the market. The mainframe market was perhaps the healthiest in the entire dp business: among the top 15, no company's mainframe revenues fell, and only one remained flat, Burroughs at $747.3 million. Supercomputer maker Cray had the largest percentage increase in sales in this market, rising 66.3% to $332.6 million from 1984's $200 million. Of course, at the prices it charges, Cray can improve revenues exponentially by selling just a few more machines.

The biggest revenue producer in the dp market of the DATAMATION 100 companies is, not surprisingly, peripherals and supplies. Just over $41 billion, more than a quarter of the total dp pie, ended up on the plates of peripherals sellers. No surprises in who took the lion's share: IBM grabbed $12.6 billion in peripherals sales, up 8.8% from its 1984 performance. DEC took second place in this market, with $2.7 billion. More than a third of the top 15 peripherals marketers in the DATAMATION 100 were non-U.S. companies, among them the biggest growers, Toshiba, up 45.6% to $759 million, and Hitachi, up 35.1%. The Japanese share of the disk drive, printer, and facsimile markets in particular had strong growth.

FEW ALL-SOFTWARE COMPANIES

"Pure" software companies were again conspicuous by their rarity on the list, with only two making appearances, Lotus Development and Sterling Software. In the services area, there was no change at all from last year's list in the top seven slots. Longtime leader Automatic Data Processing held on to the top spot, trailed by Control Data, GM's EDS, General Electric, Computer Sciences, McDonnell Douglas, and Martin Marietta.

FIG. 5

THE TOP 15 COMPANIES IN PERIPHERALS

DTM 100 RANK	COMPANY	1985 ($ MIL.)	1984 ($ MIL.)	% CHANGE*
1	IBM	12,676.0	11,652.0	8.8
2	Digital Equipment Corp.	2,750.0	2,500.0	10.0
4	Burroughs Corp.	1,479.0	1,412.0	4.7
14	Xerox Corp.	1,430.0	1,180.0	21.2
11	Hitachi Ltd.	1,416.7	1,049.0	35.1
8	Control Data Corp.	1,270.0	1,314.5	-3.4
13	Wang Laboratories Inc.	1,229.5	1,100.6	11.7
9	Hewlett-Packard Corp.	1,100.0	900.0	22.2
5	Fujitsu Ltd.	1,064.3	932.1	14.2
7	NEC Corp.	1,053.3	882.3	19.4
6	NCR Corp.	1,000.0	950.0	5.3
10	Siemens AG	816.2	701.8	16.3
21	Toshiba Corp.	759.5	521.7	45.6
16	Groupe Bull	699.1	605.9	15.4
15	Honeywell Inc.	656.0	600.0	9.3

*Percent change in dollars. In actual accounting currencies, Hitachi's peripherals revenues were up 35.1% to ¥337.3 billion; Fujitsu's were up 14.2% to ¥253.4 billion; NEC's were up 19.4% to ¥250.7 billion; Siemens' were up 20% to DM2.4 billion; Toshiba's were up 45.6% to ¥180.8 billion; and Groupe Bull's were up 18.5% to FF6.2 billion.

FIG. 6

THE TOP 15 COMPANIES IN COMPUTER SERVICES

DTM 100 RANK	COMPANY	1985 ($ MIL.)	1984 ($ MIL.)	% CHANGE*
31	Automatic Data Processing Inc.	1,102.1	959.4	14.9
8	Control Data Corp.	1,058.7	930.5	13.8
32	General Motors Corp.	978.3	786.1	24.4
29	General Electric Co.	950.0	825.0	15.2
37	Computer Sciences Corp.	800.7	709.6	12.8
30	McDonnell Douglas Corp.	650.0	608.0	6.9
58	Martin Marietta Corp.	429.9	361.5	18.9
39	Nippon Telegraph and Telephone Corp.	382.0	375.0	1.9
3	Sperry Corp.	302.5	288.6	4.8
6	NCR Corp.	300.0	285.0	5.3
1	IBM	300.0	200.0	50.0
79	Boeing Corp.	270.0	260.0	3.8
14	Xerox Corp.	200.0	180.0	11.1
96	General Instrument Corp.	190.2	193.4	-1.7
99	Quotron Systems Inc.	187.5	189.9	-1.3

*Percent change in dollars. In actual accounting currencies, Nippon Telegraph and Telephone's computer services revenues were up 1.9% to ¥90.9 billion.

THE DATAMATION 100

A conspicuous new entry is the deregulated Japanese telecom giant, Nippon Telegraph and Telephone, with services revenues of $382 million (¥90.9 billion).

Bucking the overall upward trend outside the U.S. was Thorn EMI, down 38.5% in actual accounting currency; in dollars, the company declined to $205 million from $346.7 million. Other Asian and European companies on the list whose dp revenues fell were Japan's Sony and the U.K.'s Plessey and Racal. Much of Racal's grief is attributed to unhappy results from its U.S. operations.

Several U.S. companies—including IBM—said in their annual reports for 1985 that good international business had eased the sting of bad news at home. It is expected that the falling value of the dollar will make foreign markets even more attractive for U.S. vendors in 1986.

A recent study of the total European dp market for 1985 showed that it was up an estimated 16%. And in Japan, IBM Japan's share of the local market for mainframes, for example, was over 30% compared to homegrown Fujitsu's 28.7%. Manufacturing by American companies has also found a happy home in Japan, where more than half the production value of both the top and bottom of IBM's line—the Sierra and the PC—originates.

The largest European company on this year's list held that honor last year: Siemens again took 10th place with dollar dp sales of $3.2 billion, up 17% from 1984's $2.8 billion. (In actual accounting currency, Siemens was up 20.8%, to DM9.6 billion from DM7.9 billion.) Next was Olivetti, also up nicely, rising 18.7% to $2.5 billion. (Reflecting the dollar's strength during the year, Olivetti's sales were up even more in lira, rising 42.5% to L5.04 trillion from 1984's L3.5 trillion.)

The largest Asian company, with the fifth highest dp sales in the industry, was Fujitsu. While dp revenues for this plug-compatible specialist rose about 12%, profits for the corporation as a whole were dismal, dropping 32.9% in actual accounting currency. Most of the growth of Japanese dp companies last year came within their domestic market, with dp exports rising only 1.6%. On the other hand, analysts at the U.S. Embassy in Tokyo have told DATAMATION that Japanese imports of dp ware were up substantially, rising 31% to $1.2 billion in 1985. Since this does not include the sizable sales of U.S.-owned Japanese-based subsidiaries, the U.S. payoff from Japanese operations is impressive.

Not on this year's list, but poised to appear on next year's, are the Korean companies, Daewoo in particular. With the val-

FIG. 7

THE TOP 10 MONEY MAKERS

DTM 100 RANK	COMPANY	1985 % NET RETURN ON SALES	1984 % NET RETURN ON SALES
62	Cray Research Inc.	20	20
89	Lotus Development Corp.	17	23
54	Comdisco Inc.	15	5
55	British Telecom plc	13	13
1	IBM	13	14
51	Intergraph Corp.	13	16
72	Shared Medical Systems Corp.	13	13
99	Quotron Systems Inc.	11	14
98	Gerber Scientific Inc.	10	11
49	Telex Corp.	10	9

FIG. 8

GROWTH SPURTS

Companies ranked by % change in dp revenue

DTM 100 RANK	COMPANY	% CHANGE*	1985 DP REVS. ($ MIL.)	1984 DP REVS. ($ MIL.)
90	Atlantic Computers plc	87.0	224.0	120.0
69	Xidex Corp.	75.0	342.0	195.4
62	Cray Research Inc.	66.1	380.2	228.8
52	Compaq Computer Co.	53.1	503.9	329.0
89	Lotus Development Corp.	43.7	225.5	159.9
67	Zenith Electronics Corp.	41.3	352.0	249.0
74	Apollo Computer Inc.	36.9	295.6	215.9
82	NBI Inc.	36.4	260.7	191.1
47	Ricoh Co. Ltd.	35.2	634.7	469.2
49	Telex Corp.	34.9	597.4	442.7

*Percent change in dollars. In actual accounting currencies, Atlantic's revenues were up 94.4%; Ricoh's were up 35.3%.

FIG. 9

DIRTY DOZEN

Top 12 money losers

DTM 100 RANK	COMPANY	1985 NET LOSS ($ MIL.)
8	Control Data Corp.	567.5
41	Commodore International Ltd.	237.2
80	Gould Inc.	175.7
81	Tandon Corp.	135.4
42	Texas Instruments Inc.	118.7
96	General Instrument Corp.	106.7
46	National Semiconductor Corp.	89.5
57	Computervision Corp.	80.8
24	STC plc	69.0*
13	Wang Laboratories Inc.	63.3
59	Datapoint Corp.	62.1
45	Storage Technology Corp.	57.4

*In actual accounting currency, STC plc lost £53.8 million.

ue of Korean currency tied directly to that of the U.S. dollar, the strengthening yen means that the trend toward Korean manufacture will continue. For example, the successful PC clone sold in the U.S. by Leading Edge used to be built by Japan's Mitsubishi; now Daewoo does it.

While 11 of the 12 "biggest losers," the companies with the greatest net losses for the year, were U.S. companies, two non-U.S. companies on this year's list also ended up in the red: the U.K.'s STC plc lost $69 million (£53.8 million in actual accounting currency), and Canada's Mitel lost $23.1 million (C$31.6 million in actual accounting currency). Control Data's well-publicized troubles gave it top "honors" in this gloomy category, as more than half a billion dollars were written in red ink. The biggest loser on last year's chart, Storage Technology, while still in the minus column for 1985, did make some money in its fourth quarter: it lost $57.6 million for 1985, much improved from the $505.5 million it had lost in 1984. Ceo Ryal Poppa has predicted the company will leave the minus column for good in 1986.

METHODOLOGY

Throughout the year, DATMATION observes over 200 companies on a worldwide basis. The survey is meant to be used as a comparative analysis, and therefore all revenues and earnings figures have been adjusted to calendar-year calculations. Because over half the companies covered operate on a fiscal year that does not coincide with the calendar year, their revenues and earnings for purposes of this survey have been derived from quarterly reports and our best estimates. DATAMATION has listed total net income in all cases, not income from continuing operations. Numbers relating to research and development expenditures and total number of employees, however, are reported as of each company's most recent fiscal year-end.

During 1985, a number of DATAMATION 100 companies restated their year-earlier performance figures, whether to reflect changed accounting methods, mergers, spin-offs, or just plain errors in earlier reports. Each chart and table within the survey incorporates the restated numbers. On the main chart of the DATAMATION 100, however, each company's relative position is as it was published last year.

Also, note that a company's internal sales made to other divisions or units within the company are excluded from the year's total data processing revenues, as they are considered captive and not commercial sales.

For purposes of the survey, dp-re-

FIG. 10

HEARTY WORKERS

The top companies by dp revenue per employee

DTM 100 RANK	COMPANY	REVS. PER EMPL. ($ THOU.)	1985 DP REVS. ($ MIL.)	1985 EMPLS.
17	Apple Computer Corp.	419.3	1,753.8	4,182
52	Compaq Computer Corp.	270.9	503.9	1,860
60	Convergent Technologies Inc.	198.3	395.2	1,992
50	Nippon Univac Kaisha Ltd.	129.9	552.9	4,254
94	Centronics Data Computer Corp.	127.1	216.2	1,700
35	Amdahl Corp.	123.1	862.0	7,000
99	Quotron Systems Inc.	120.9	205.7	1,701
1	IBM	119.7*	48,554.0	405,535
62	Cray Research Inc.	119.5	380.2	3,180
48	Tandem Computer Inc.	115.5	634.6	5,494
51	Intergraph Corp.	103.9	526.4	5,065
38	Prime Computer Inc.	94.8	769.7	8,115

Because IBM receives an estimated 3.1% of its total revenues from nondp business, its dp productivity is assumed to be slightly higher. The other companies on the chart derive 100% of their total revenues from dp.

FIG. 11

THE 10 WHO HIRED THE MOST

DTM 100 RANK	COMPANY	1985 EMPLS.	1984 EMPLS.	% CHANGE
95	Seagate Technology	5,700	3,700	54.1
62	Cray Research Inc.	3,180	2,203	44.3
52	Compaq Corp.	1,860	1,400	32.9
47	Ricoh Co. Ltd.	25,000	20,000	25.0
24	STC plc	51,600	43,200	19.4
72	Shared Medical Systems Corp.	3,300	2,800	17.9
60	Convergent Technologies Inc.	1,992	1,700	17.2
37	Computer Sciences Corp.	15,600	13,400	16.4
87	Cap Gemini Sogeti	5,200	4,500	15.6
23	Nixdorf Computer AG	23,290	20,190	15.4

FIG. 12

THE 10 WHO FIRED THE MOST

DTM 100 RANK	COMPANY	1985 EMPLS.	1984 EMPLS.	% CHANGE
63	Dataproducts Corp.	4,100	5,800	-29.3
59	Datapoint Corp.	5,993	8,431	-28.9
57	Computervision Corp.	4,770	6,500	-26.6
17	Apple Computer Corp.	4,182	5,382	-22.3
8	Control Data Corp.	44,300	54,100	-18.1
3	Sperry Corp.	67,000	77,000	-12.9
81	Tandon Corp.	3,100	3,500	-11.4
46	National Semiconductor Corp.	37,100	41,700	-11.0
42	Texas Instruments Inc.	77,872	86,563	-10.0
44	Motorola Inc.	90,200	99,900	-9.7

lated revenue is defined as general purpose dp products and services generated by one or more of the following categories of equipment: mainframes, minicomputers, microcomputers, office systems, data communications, peripherals and terminals, software and services, and maintenance and repair. Explicitly excluded are data transmission or "basic" services revenues from specialized common carriers; standalone electronic and mag card typewriters and standalone electronic cash registers; instrumentation; semiconductors; printed circuit boards; automatic test equipment; and dp supplies, with the exception of magnetic media for disk and tape drives. All peripherals that attach to a system are included. For computer-based manufacturing systems, such as computer-controlled machine tools, only the computer and hardcopy output devices are included and not the tools themselves.

In cases where a company has not explicitly stated dp revenues, DATAMATION has estimated the figures based on investigative reporting and observation of industry trends.

In other cases, where companies did not cooperate fully with the survey, it was necessary to estimate performance of particular product segments that produced revenues. In some instances, particularly maintenance and repair, and software sales by large hardware manufacturers who will not separate software revenues from system sales, the market segmentation is either the company's own breakdown or DATAMATION's best estimate.

To calculate the dollar value of the results of non-U.S. companies, OECD average exchange rates were used. For calendar 1985, the equivalents to one dollar in these currencies were the following: Canada, C$1.37; Finland, MK6.20; France, FF8.98; Italy, L1,909.4; Japan, ¥238.62; the Netherlands, G3.32; Norway, NOK8.59; Sweden, Skr8.6; the U.K., £.78; and West Germany, DM2.94;

For calendar 1984, the equivalents to one dollar were Canada, C$1.28; Finland, MK6.0; France, FF8.74; Italy, L1,757.0; Japan, ¥237.55; the Netherlands, G3.21; Norway, NOK8.16; Sweden, Skr8.27; the U.K., £.75; and West Germany, DM2.85.

Reprints of the DATAMATION 100 survey, including individual profiles, are available in quantities of 100 or more. Details may be obtained by telephoning Cindy Lam at (212) 605-9730 or by writing to DATAMATION, 875 Third Ave., New York, NY 10022.

FIG. 13

BEYOND THE DOLLAR

(Ranked by % change in dp revenues in actual accounting currency.)

DTM 1985 RANK	COMPANY	AAC % CHNG.	1985 DP REVS. AAC (MIL.)	1984 DP REVS. AAC (MIL.)	COUNTRY
90	Atlantic Computers	94.4	£175.0	90.0	U.K.
12	Ing. C. Olivetti & Co. S.P.A.	42.4	L5,036,500.0	3,535,700.0	Italy
92	Norsk Data AS	38.8	NOK1,888.0	1360.0	Norway
47	Ricoh Co. Ltd.	35.3	¥151,118.0	111,719.8	Japan
21	Toshiba Corp.	30.1	¥335,483.4	257,910.0	Japan
20	Matsushita Elec. Indust. Co.	30.0	¥344,662.7	265,105.8	Japan
93	Nokia Corp.	24.2	MK1,349.0	1,086.0	Finl.
65	BASF	23.5	DM1,050.0	850.0	W. Ger.
67	Cap Gemini Sogeti	22.2	F2,200.0	1,800.0	France
10	Siemens AG	20.8	DM9,600.0	7,950.0	W. Ger.
39	Nippon Telegraph and Telephone	20.8	¥181,923.9	150,582.9	Japan
23	Nixdorf Computer AG	20.5	DM3.939.6	3,270.0	W. Ger.
56	Volkswagen	19.7	DM1,331.7	1,112	W. Ger.
16	Groupe Bull	18.5	F16,109.0	13,596.0	France
43	C. Itoh & Co. Ltd.	14.6	¥168,251.0	146,782.0	Japan
7	NEC Corp.	14.1	¥895,660.2	785,317.0	Japan
26	LM Ericsson	14.1	Skr10,600.0	9,290.0	Sweden
22	N.V. Philips	13.4	G4,534.0	4,000.0	Neth.
25	Northern Telecom Ltd.	13.3	C$1,700.0	1,500.0	Canada
33	Mitsubishi Electric Corp.	13.3	¥222,210.0	196,160.0	Japan
11	Hitachi Ltd.	12.6	¥687,000.0	610,000.0	Japan
5	Fujitsu Ltd.	12.3	¥1,026,066.0	913,973.6	Japan
50	Nippon Univac Kaisha Ltd.	11.5	¥131,646.7	118,062.4	Japan
53	Compagnie Géné rale d'Electricité	10.3	F4,300.0	3,900.0	France
77	Ferranti plc	10.3	£220.0	199.5	U.K.
24	STC plc	10.0	£1,038.0	£944.0	U.K.
76	Mitel Corp.	8.9	C$403.9	371.0	Canada
66	Mannesmann Kienzle GmbH	7.0	DM1,046.0	977.6	W. Ger.
34	Oki Electric Industry Co. Ltd.	4.0	¥211,990.0	203,770.4	Japan
55	British Telecom plc	0.0	£355.0	0.0	U.K.
88	Plessey Co. plc	-10.3	£195.0	217.5	U.K.
91	Sony Corp.	-10.3	¥52,806.6	58,888.6	Japan
61	Racal Electronics plc	-14.4	£297.0	347.0	U.K.
100	Thorn EMI	-38.5	£159.9	260.0	U.K.

THE DATAMATION 100

THE LEADING WORLDWIDE DP COMPANIES

1985 RANK	1984 RANK	COMPANY	1985 TOTAL REVENUE	1985 DP REVENUE	1984 DP REVENUE	DP REV % CHG
1	1	International Business Machines	$50,056.0	$48,554.0	$44,292.0	9.6
2	2	Digital Equipment Corp.	7,029.4	7,029.4	6,230.0	12.8
3	7	Sperry Corp.	5,526.8	4,755.1	4,015.0	18.4
4	3	Burroughs Corp.	5,037.7	4,685.3	4,500.0	4.1
5	6	Fujitsu Ltd.	6,563.0	4,309.5	3,838.7	12.3
6	5	NCR Corp.	4,317.2	3,885.5	3,670.0	5.9
7	9	NEC Corp.	9,899.4	3,761.8	3,298.3	14.1
8	4	Control Data Corp.	3,679.7	3,679.7	3,692.6	-0.3
9	8	Hewlett-Packard Co.	6,505.0	3,675.0	3,400.0	8.1
10	10	Siemens AG	18,574.9	3,265.0	2,789.7	17.0
11	12	Hitachi Ltd.	20,919.4	2,885.4	2,562.0	12.6
12	13	Ing. C. Olivetti & Co. S.P.A.	3,070.2	2,518.2	2,121.4	18.7
13	11	Wang Laboratories Inc.	2,428.3	2,428.3	2,421.3	0.3
14	17	Xerox Corp.	8,732.1	1,959.0	1,718.2	14.0
15	15	Honeywell Inc.	6,624.6	1,951.9	1,825.3	6.9
16	16	Groupe Bull	1,794.5	1,794.5	1,555.4	15.4
17	14	Apple Computer Corp.	1,753.8	1,753.8	1,897.9	-7.6
18	18	AT&T Co.	34,910.0	1,500.0	1,340.0	11.9
19	25	TRW Inc.	5,917.2	1,450.0	1,105.0	31.2
20	—	Matsushita Electric Indust. Co. Ltd.	21,221.4	1,447.6	1,113.4	30.0
21	22	Toshiba Corp.	14,377.9	1,409.0	1,083.2	30.1
22	26	N.V. Philips Gloeilampenfabrieken	18,085.6	1,365.6	1,246.0	9.6
23	21	Nixdorf Computer AG	1,339.9	1,339.9	1,147.4	16.8
24	20	STC plc	2,560.6	1,330.8	1,258.6	5.7
25	27	Northern Telecom Ltd.	4,246.9	1,240.8	1,170.0	6.1
26	24	LM Ericsson	3,779.3	1,232.8	1,123.2	9.8
27	38	Tandy Corp.	3,126.3	1,200.0	932.6	28.7
28	19	Data General Corp.	1,199.7	1,199.7	1,254.5	-4.4
29	31	General Electric Co.	28,285.0	1,130.0	945.0	19.6
30	28	McDonnell Douglas Corp.	11,477.7	1,104.5	982.8	12.4
31	29	Automatic Data Processing Inc.	1,102.1	1,102.1	959.4	14.9
32	35	General Motors Corp.	96,371.7	978.3	786.1	24.4
33	33	Mitsubishi Electric Corp.	8,484.4	933.3	823.9	13.3
34	30	Oki Electric Industry Co. Ltd.	1,680.0	890.4	855.8	4.0
35	36	Amdahl Corp.	862.0	862.0	779.4	10.6
36	37	Harris Corp.	2,306.6	810.0	730.0	11.0
37	39	Computer Sciences Corp.	800.7	800.7	709.6	12.8
38	40	Prime Computer Inc.	769.7	769.7	642.8	19.7
39	—	Nippon Telegraph and Telephone Corp.	20,651.4	764.1	632.4	20.8
40	41	ITT Corp.	20,007.0	756.0	640.0	18.1
41	23	Commodore International Ltd.	798.6	750.0	1,150.0	-34.8
41	32	Texas Instruments Inc.	4,924.5	750.0	860.0	-12.8
43	49	C. Itoh & Co. Ltd.	61,435.1	706.7	616.5	14.6
44	43	Motorola Inc.	5,443.0	704.0	618.0	13.9
45	34	Storage Technology Corp.	673.4	673.4	808.6	-16.7
46	47	National Semiconductor Corp.	1,605.9	650.0	550.0	18.2
47	65	Ricoh Co. Ltd.	2,441.2	634.7	469.2	35.3
48	45	Tandem Computers Inc.	634.6	634.6	565.9	12.1
49	50	Telex Corp.	683.1	597.4	442.7	34.9
50	—	Nippon Univac Kaisha Ltd.	552.9	552.9	495.9	11.5

All dollar figures are in millions. NA: not available

DP AS % OF TOT	NONDOLLAR ACCTG CURRENCY 1985 DP	1984 DP	% CHG	CNTRY	1985 EMPL	R&D CORP 1985	R&D AS % OF TOT REV	NET INCOME	FISCAL YEAR END
97					405,535	$4,723.0	9.4	$6,555.0	Dec.
100					91,000	770.0	10.9	400.6	June
86					67,000	504.9	9.1	37.4	March
93					60,500	285.2	5.7	248.2	Dec.
66	¥1,026,066.0	913,973.6	12.3	Japan	74,187	524.5	9.9	235.2	March
90					62,000	299.1	6.9	315.2	Dec.
38	¥895,660.2	785,317.0	14.1	Japan	90,102	1,258.8	12.7	249.9	March
100					44,300	438.3	11.9	-567.5	Dec.
56					84,000	685.0	10.5	489.0	Oct.
18	DM9,600.0	7,950.0	20.8	W. Ger.	348,000	1,632.5	8.8	519.7	Sept.
14	¥687,000.0	610,000.0	12.6	Japan	164,951	1,223.9	5.9	768.6	March
82	L5,036,500.0	3,535,700.0	42.4	Italy	48,944	142.0	4.6	250.0	Dec.
100					31,000	187.0	7.7	-63.3	June
22					102,396	603.1	6.9	475.0	Dec.
29					94,022	451.4	6.8	281.6	Dec.
100	FF16,109.0	13,596.0	18.5	France	26,403	182.3	10.2	12.3	Dec.
100					4,182	72.5	4.1	72.0	Sept.
4					337,600	2,209.7	6.3	1,557.0	Dec.
25					82,446	254.9	4.3	-7.1	Dec.
7	¥344,662.7	265,105.8	30.0	Japan	133,963	1,011.0	4.8	1,035.1	Nov.
10	¥335,483.4	257,910.0	30.1	Japan	114,000	862.7	6.0	326.5	March
8	G4,534.0	4,000.0	13.4	Neth.	345,600	1,208.1	6.6	276.8	Dec.
100	DM3,939.6	3,270.0	20.5	W. Ger.	23,290	130.9	9.8	NA	Dec.
52	£1,038.0	944.0	10.0	U.K.	51,600	196.8	7.7	-69.0	Dec.
29	C$1,700.0	1,500.0	13.3	Canada	46,549	427.9	10.1	275.0	Dec.
33	Skr10,600.0	9,290.0	14.1	Sweden	78,000	325.4	8.6	38.7	Dec.
38					35,000	NA	NA	203.9	June
100					16,535	128.4	10.7	24.3	Sept.
4					304,000	NA	NA	2,336.0	Dec.
10					97,067	NA	NA	345.7	Dec.
100					18,500	42.0	3.8	95.3	June
1					811,000	NA	NA	3,999.0	Dec.
11	¥222,210.0	196,160.0	13.3	Japan	68,745	339.4	4.0	169.1	March
53	¥211,990.0	203,770.4	4.0	Japan	18,134	NA	NA	19.0	March
100					7,000	134.8	15.9	28.7	Dec.
35					31,400	116.0	5.0	60.7	June
100					15,600	NA	NA	22.3	March
100					8,115	81.8	10.6	57.8	Dec.
4	¥181,923.9	150,582.9	20.8	Japan	314,000	534.9	2.6	1,375.9	March
4					232,000	1,100.0	5.5	293.5	Dec.
94					NA	46.5	NA	-237.2	June
15					77,872	769.0	15.6	-118.7	Dec.
1	¥168,251.0	146,782.0	14.6	Japan	NA	NA	NA	NA	March
13					90,200	464.0	8.5	72.0	Dec.
100					NA	65.5	9.7	-57.4	Dec.
40					37,100	204.6	12.7	-89.5	May
26	¥151,118.0	111,719.8	35.3	Japan	25,000	122.1	5.0	74.4	March
100					5,494	71.6	11.3	31.9	Sept.
87					6,370	34.3	9.1	67.0	March
100	¥131,646.7	118,062.4	11.5	Japan	4,254	27.7	5.0	10.4	March

THE DATAMATION 100

THE LEADING WORLDWIDE DP COMPANIES

1985 RANK	1984 RANK	COMPANY	1985 TOTAL REVENUE	1985 DP REVENUE	1984 DP REVENUE	DP REV % CHG
51	52	Intergraph Corp.	$526.4	$526.4	$403.8	30.4
52	61	Compaq Computer Corp.	503.9	503.9	329.0	53.2
53	—	Compagnie Générale d'Electricité	8,908.7	479.0	446.2	7.4
54	—	Comdisco Inc.	602.9	467.9	387.6	20.7
55	—	British Telecom plc	10,504.2	455.1	NA	NA
56	42	Volkswagen AG	17,855.2	452.9	390.4	16.0
57	46	Computervision Corp.	441.1	441.1	556.3	-20.7
58	58	Martin Marietta Corp.	4,410.1	429.9	361.5	18.9
59	44	Datapoint Corp.	404.2	404.2	556.2	-27.3
60	57	Convergent Technologies Inc.	395.2	395.2	361.7	9.3
61	51	Racal Electronics plc	1,627.0	380.8	462.7	-17.7
62	77	Cray Research Inc.	380.2	380.2	228.8	66.2
63	48	Dataproducts Corp.	378.4	378.4	438.8	-13.8
64	54	Tektronix Inc.	1,434.5	366.9	386.7	-5.1
65	63	BASF	15,092.6	357.1	298.3	19.7
66	60	Mannesmann Kienzle GmbH	448.1	355.7	343.0	3.7
67	75	Zenith Electronics Corp.	1,623.7	352.0	249.0	41.4
68	—	Arthur Andersen	1,573.9	343.6	281.7	22.0
69	—	Xidex Corp.	342.0	342.0	195.4	75.0
70	55	Diebold Inc.	410.9	324.2	374.1	-13.3
71	70	Sanders Associates Inc.	783.8	323.4	260.8	24.0
72	72	Shared Medical Systems Corp.	312.2	312.2	256.8	21.6
73	73	M/A-COM Inc.	855.2	305.4	250.0	22.2
74	80	Apollo Computer Inc.	295.6	295.6	215.9	36.9
75	67	3M	7,846.0	295.4	281.4	5.0
76	68	Mitel Corp.	294.8	294.8	289.4	1.9
77	69	Ferranti plc	737.2	282.1	266.0	6.1
78	76	Continental Telecom Inc.	2,557.0	277.8	242.4	14.6
79	71	Boeing Co.	13,636.0	270.0	260.0	3.8
80	79	Gould Inc.	1,420.1	269.4	224.5	20.0
81	53	Tandon Corp.	268.8	268.8	398.5	-32.5
82	84	NBI Inc.	260.7	260.7	191.1	36.4
83	74	Perkin-Elmer Corp.	1,310.0	259.0	233.0	11.2
84	—	MAI Basic Four Inc.	252.8	252.8	NA	NA
85	66	Paradyne Corp.	252.5	252.5	289.9	-12.9
86	64	Plessey Co. plc	1,862.0	250.0	290.0	-13.8
87	82	Cap Gemini Sogeti	245.1	245.1	205.9	19.0
88	—	Sterling Software Inc.	238.8	238.8	196.9	21.3
89	100	Lotus Development Corp.	225.5	225.5	156.9	43.7
90	—	Atlantic Computers plc	234.8	224.4	120.0	87.0
91	—	Sony Corp.	5,994.8	221.8	247.3	-10.3
92	96	Norsk Data AS	219.8	219.8	166.6	31.9
93	87	Nokia Corp.	1,777.5	217.6	181.0	20.2
94	92	Centronics Data Computer Corp.	216.2	216.2	171.5	26.1
95	62	Seagate Technology	214.6	214.6	343.9	-37.6
96	78	General Instrument Corp.	848.0	210.2	248.7	-15.5
97	—	Eastman Kodak Co.	10,631.0	210.0	219.0	-4.1
98	86	Gerber Scientific Inc.	207.2	207.2	213.2	-2.8
99	85	Quotron Systems Inc.	205.7	205.7	189.8	8.4
100	59	Thorn EMI	4,108.4	205.0	346.7	-40.9

All dollar figures are in millions. NA: not available.

DP AS % OF TOT	NONDOLLAR ACCTG CURRENCY 1985 DP	1984 DP	% CHG	CNTRY	1985 EMPL	R&D CORP 1985	AS % OF TOT REV	NET INCOME	FISCAL YEAR END
100					5,065	$50.7	9.6	$67.8	Dec.
100					1,860	15.9	3.1	26.6	Dec.
5	FF4,300.0	3,900.0	10.3	France	155,000	NA	NA	111.4	Dec.
78					NA	NA	NA	87.5	Dec.
4	£355.0	NA	NA	U.K.	232,000	243.6	2.3	1,341.1	Dec.
3	DM1,331.7	1,112.6	19.7	W. Ger.	NA	NA	NA	NA	Dec.
100					4,770	61.6	13.8	-80.8	Dec.
10					66,000	176.2	4.0	249.4	Dec.
100					5,993	44.7	11.1	-62.1	July
100					1,992	28.4	7.1	11.5	Dec.
23	£297.0	347.0	-14.7	U.K.	33,000	102.6	6.3	138.5	March
100					3,180	49.2	12.9	75.6	Dec.
100					4,100	31.2	8.2	23.4	March
26					20,094	201.5	14.0	92.7	May
2	DM1,050.0	850.0	23.5	W. Ger.	130,173	850.2	5.6	NA	Dec.
79	DM1,046.0	977.6	7.0	W. Ger.	8,246	NA	NA	NA	Dec.
22					33,000	96.0	5.9	-7.7	Dec.
22					29,802	NA	NA	NA	Aug.
100					NA	NA	NA	17.8	June
79					5,229	16.4	4.0	30.4	Dec.
41					11,413	40.1	5.1	35.1	July
100					3,300	28.5	9.1	41.7	Dec.
36					11,790	116.0	13.6	32.6	Sept.
100					3,400	41.5	14.0	-1.5	Dec.
4					85,466	507.0	6.5	664.0	Dec.
100	C$403.9	371.0	8.9	Canada	5,233	NA	NA	-23.1	Feb.
38	£220.0	199.5	10.3	U.K.	20,981	NA	NA	38.6	March
11					22,000	NA	NA	240.0	Dec.
2					104,000	409.0	3.0	566.0	Dec.
19					18,605	189.8	13.4	-175.7	Dec.
100					3,100	12.3	4.6	-135.4	Sept.
100					NA	NA	NA	7.9	June
20					15,515	114.3	8.7	82.1	July
100					2,722	15.0	5.9	8.2	Sept.
100					3,749	23.9	9.5	-31.2	Dec.
13	£195.0	217.5	-10.3	U.K.	37,533	107.4	5.8	104.0	Mar.
100	FF2,200.0	1,800.0	22.2	France	5,200	12.3	5.0	14.1	Dec.
100					3,000	NA	NA	-7.7	Sept.
100					NA	21.2	9.4	38.2	Dec.
96	£175.0	90.0	94.4	U.K.	NA	1.9	NA	21.2	Dec.
4	¥52,806.6	58,888.6	-10.3	Japan	44,908	464.7	7.8	306.7	Oct.
100	NOK1,888.0	1,360.0	38.8	Norway	NA	NA	NA	NA	Dec.
12	FMK1,349.0	1,086.0	24.2	Finland	28,000	77.3	NA	NA	Dec.
100					1,700	10.4	4.8	0.6	Dec.
100					5,700	19.3	9.0	1.0	June
25					NA	52.5	20.8	-106.7	Feb.
2					128,950	976.0	9.2	332.0	Dec.
100					NA	16.9	8.2	19.7	April
100					1,701	17.0	8.3	22.0	Dec.
5	£159.9	260.0	-38.5	U.K.	NA	NA	NA	NA	March

THE U.S. 100

THE LEADING U.S. DP COMPANIES

1985 RANK	COMPANY	1985 DP REVENUE
1	International Business Machines	$48,554.0
2	Digital Equipment Corp.	7,029.4
3	Sperry Corp.	4,755.1
4	Burroughs Corp.	4,685.3
5	NCR Corp.	3,885.5
6	Control Data Corp.	3,679.7
7	Hewlett-Packard Co.	3,675.0
8	Wang Laboratories Inc.	2,428.3
9	Xerox Corp.	1,959.0
10	Honeywell Inc.	1,951.9
11	Apple Computer Corp.	1,753.8
12	AT&T Co.	1,500.0
13	TRW Inc.	1,450.0
14	Tandy Corp.	1,200.0
15	Data General Corp.	1,199.7
16	General Electric Co.	1,130.0
17	McDonnell Douglas Corp.	1,104.5
18	Automatic Data Processing Inc.	1,102.1
19	General Motors Corp.	978.3
20	Amdahl Corp.	862.0
21	Harris Corp.	810.0
22	Computer Sciences Corp.	800.7
23	Prime Computer Inc.	769.7
24	ITT Corp.	756.0
25	Commodore International Ltd.	750.0
25	Texas Instruments Inc.	750.0
27	Motorola Inc.	704.0
28	Storage Technology Corp.	673.4
29	National Semiconductor Corp.	650.0
30	Tandem Computers Inc.	634.6
31	Telex Corp.	597.4
32	Intergraph Corp.	526.4
33	Compaq Computer Corp.	503.9
34	Comdisco Inc.	467.9
35	Computervision Corp.	441.1
36	Martin Marietta Corp.	429.9
37	Datapoint Corp.	404.2
38	Convergent Technologies Inc.	395.2
39	Cray Research Inc.	380.2
40	Dataproducts Corp.	378.4
41	Tektronix Inc.	366.9
42	Zenith Electronics Corp.	352.0
43	Arthur Andersen & Co.	343.6
44	Xidex Corp.	342.0
45	Diebold Inc.	324.2
46	Sanders Associates Inc.	323.4
47	Shared Medical Systems Corp.	312.2
48	M/A-COM Inc.	305.4
49	Apollo Computer Inc.	295.6
50	3M	295.4
51	Continental Telecom Inc.	$277.8
52	Boeing Co.	270.0
53	Gould Inc.	269.4
54	Tandon Corp.	268.8
55	NBI Inc.	260.7
56	Perkin-Elmer Corp.	259.0
57	MAI Basic Four Inc.	252.8
58	Paradyne Corp.	252.5
59	Sterling Software Inc.	238.8
60	Lotus Development Corp.	225.5
61	Centronics Data Computer Corp.	216.2
62	Seagate Technology	214.6
63	General Instrument Corp.	210.2
64	Eastman Kodak Co.	210.0
65	Gerber Scientific Inc.	207.2
66	Quotron Systems Inc.	205.7
67	UCCEL Corp.	204.8
68	Planning Reasearch Corp.	203.0
69	Micom Systems Inc.	194.2
70	Intel Corp.	187.2
71	Cullinet Software Inc.	182.8
72	General DataComm Industries Inc.	179.4
73	Reynolds & Reynolds Co.	178.0
74	Decision Data Computer Corp.	176.4
75	ISC Systems Corp.	175.0
76	Computer Associates Int'l Inc.	170.4
77	Recognition Equipment Inc.	163.1
78	Microsoft Corp.	162.6
79	Mead Corp.	153.8
80	Cipher Data Products Inc.	152.5
81	Management Science America Inc.	151.7
82	Ameritech	150.0
82	Signal Cos.	150.0
84	CPT Corp.	149.3
85	National Data Corp.	149.1
86	Printronix Inc.	148.4
87	Telerate Inc.	148.0
88	Software AG Systems Inc.	143.0
89	Xebec	136.2
90	Daisy Systems Corp.	133.6
91	Lear Siegler Inc.	130.0
91	Schlumberger Ltd.	130.0
93	Floating Point Systems Inc.	128.3
94	Intelligent Systems Inc.	125.0
95	InteCom Inc.	123.6
96	Sun Micro Systems Inc.	115.0
97	American Management Systems Inc.	112.2
98	Commmerce Clearing House Inc.	112.0
98	Computer Consoles Inc.	112.0
100	Ashton-Tate	110.4

All dollar figures are in millions. NA: Not available.

1

INTERNATIONAL BUSINESS MACHINES CORP.

Old Orchard Rd.
Armonk, NY 10504
(914) 765-1900

Despite its dominance of the computer market, IBM found 1985 a year of tough sledding. "Trying" was the word it used. Gross revenues rose 9% to $50.06 billion, up from the previous year's $45.94 billion, but net earnings slipped 0.4% to $6.55 billion. Nonetheless, IBM's return on equity was a none-too-shabby 22.4%—down from 1984's 26.5%.

IBM blamed its disappointing performance on "an uncertain North American economy, currency fluctuations, sluggish capital spending," and an early 1985 pre-Sierra slowdown in mainframe orders.

Growth was strongest in non-U.S. operations, showing a 16% increase in gross income, to $21.54 billion, and a 19% increase in net earnings, to $3.08 billion. IBM said currency rates helped the bottom line in the latter half of 1985, but their effect over the year was negative. IBM's business continued to be centered around its System/370 mainframes, even as the expanding PC family and other small systems remained important. IBM is thought to earn about 50% of its total profits from mainframe products.

As IBM struggled to cut costs and maintain profit margins and market share, it was busy preparing to achieve its goal of $200 billion in revenues by 1994. Among other actions, the company reorganized its U.S. sales force, arranged to exchange most of its ailing Satellite Business Systems subsidiary for a sizable equity position in common-carrier MCI Communications Corp., entered into a variety of joint ventures in U.S. and foreign markets, and invested $4.7 billion in R&D and engineering, and $6.1 billion in new plant and equipment.

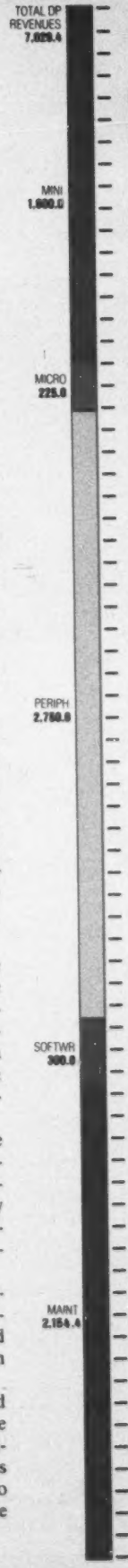
Product introduction highlights included the Sierra/3090 family of large-scale mainframes; the first pieces of a token ring office network; a double-capacity 3380 disk drive; and upgrades to its PC, System/3X, and 4300 system families. The Sierra processors were fairly well accepted by customers: IBM found it necessary to hasten production and delivery schedules.

Still, as 1986 began, IBM's inventories were surprisingly high and speculation arose that, in comparison with the still-active 308X generation, the Sierras were not as attractive to customers as they might be. Moreover, IBM's midsized, 4300-series systems came under heavy attack from large minicomputers sold by Digital and others.

The sales/services/rental mix of IBM's business continued to evolve. Gross income from software and services (totaling $11.5 billion) accounted for 23% of total revenues in 1985, up from 21% in '84; rentals dropped to 8% of the total from 14%.

Generally, IBM's hardware prices continued to fall (earlier than expected, in some cases, as the firm tried to stimulate orders and ward off competition), but wide-ranging software price increases helped raise its total worldwide software revenues to $4.16 billion, some 30% more than the comparable 1984 figure.

Revenue figures are in millions of dollars. Each increment represents $100 million.



2

DIGITAL EQUIPMENT CORP.

146 Main St.
Maynard, MA 01754
(617) 897-5111

The "new" DEC looms large in the industry. Next year the company is expected to crack the $10 billion sales barrier, and already a cultural and organizational shift is evident in its business as it prepares for the event. No longer a "stuffy engineering" company, Digital showed off its new marketing orientation in 1985 by mounting major showcase exhibitions of its full product line in France—DECville, and in the U.S.—DECworld. Last year saw the debuts of a much simpler organizational structure and product line, which resulted in better asset management: increased cash reserves and sharply decreased inventories.

In 1985, DEC forged new international accords—particularly in the embryonic South American marketplace. Above all, 1985 was a year of product transition: after a two-year delay, the first two members of the new VAX family appeared. DEC's challenge throughout the year was to maintain high revenue growth (the company grew 20% in '83 and 29% in '84), given the dramatic price declines that have accompanied the miniaturization of its new VAX line, the industry slump, and the costs of selling to more market-driven end users.

Ultimately, DEC's performance last year was linked more to the vagaries of the sluggish domestic economy than to any virtues or shortcomings of its product line. Total revenues grew by a modest 12.8% to $7.03 billion, driven primarily by the new 4MIPS VAX 8600 that began volume shipments in April, and the two-chip MicroVAX II departmental computer that reached volume in the second half of 1985. A nearly flat economy and the costs of DEC's structural and product transition squeezed the company's net profit, which dipped 17.5% to $401 million. (Note: last year's net profit of $487 million was artificially inflated by a one-time nonrecurring tax benefit of $63 million. If this gain is excluded, net profit declined only 5.5%.) Despite the safety net of a huge installed customer base, 40% of DEC's total sales still come from oems, who are vulnerable to cyclical swings in the economy. DEC cited the U.S. manufacturing sector as being particularly weak in 1985.

The picture overseas was much rosier: sales grew 25.4% to $2.8 billion, or 40% of all revenue. DEC was the first major vendor to endorse the seven-level OSI architectural standard, and intends to base future products on the model. Other highlights included the opening of a manufacturing facility in Mexico and the licensing of a Brazilian firm, Elebra Computerdoro, to manufacture its VAX computers.

As Digital matures and closes in on the magic $10 billion mark, it begins to bear a structural resemblance to its main competitor, IBM. Hardware revenue growth has slowed appreciably and the slack is now taken up by software and service revenue. DEC's service and field support revenue alone topped $2 billion in 1985. Unlike IBM, whose inventories continued to pile up to record levels ($8 billion-plus) in 1985, DEC reduced its $2 billion-plus inventory by $600 million, or 30%, last year.

Revenue figures are in millions of dollars. Each increment represents $100 million.

3

SPERRY CORP.

1290 Avenue of the Americas
New York, NY 10104
(212) 484-4444

Sperry's 1985 was a year of divestment and concentration on electronics and information processing. The company sold its New Holland farm equipment division to Ford Motor Co. It also entered into merger talks with fellow mainframer Burroughs Corp., but nothing came of them. Meanwhile, as always, the company worked to take advantage of its sizeable installed base of mainframes, hoping to sell integrated systems that would keep its customers from defecting to IBM.

Sperry reported total computing-related revenues of $4.755 billion for 1985, up 18% from $4.015 billion the previous year.

Sperry concentrated its marketing efforts in five main industries: communications, energy and engineering, airline and travel, manufacturing, and government.

The company added two entry-level 1100/90 systems to its major mainframe line, disclosed plans to develop a "new family" of System 80 midrange mainframes, introduced a scientific processor for 1100/90s, and started selling a new database machine. The company found further strong acceptance of its Sperrylink office automation system, claiming to have installed some 90,000 desktop and deskside systems during the fiscal year ended March 31, 1986.

Like other mainframe companies, Sperry has begun reselling small computers supplied by other manufacturers. It has also adopted other firms' operating systems such as Unix and MS/DOS. These moves are designed to cut development costs and attack the perennial problem of supplying customers with a sufficient choice of applications software. The strategy is not without its dangers: Sperry's deal with Encore Computer failed to live up to its promise, largely because Encore's multiprocessor computer never really worked as Sperry had originally hoped.

In the pc marketplace, Sperry added to its line of Mitsubishi-built machines a product designed to compete with IBM's PC AT; the product is sold directly to Sperry mainframe customers as well as through volume distributors and value-added resellers. Sperry agreed with Hitachi Ltd. to jointly explore semiconductor, disk drive, and software development technologies. It also signed marketing agreements for Texas Instruments' artificial intelligence workstation and Intellicorp's expert system software tool. (Sperry also secured an equity interest in Intellicorp.) In a new marketing twist, Sperry began franchising its Mapper database software to other organizations, enabling them to set up industry-specific timesharing services and sell Mapper-based packages.

Sperry announced late in the year that by Sept. 1, 1986, its executive offices will have moved to Blue Bell, Pa. The company said the move represents the continued consolidation of corporate and commercial computer staffs, furthering the strategy that ceo G.G. Probst calls "one Sperry." Later, staff functions in the defense and aerospace groups will also be consolidated.

Revenue figures are in millions of dollars. Each increment represents $100 million.

4

BURROUGHS CORP.

Burroughs Place
Detroit, MI 48232
(313) 972-7000

Last year proved just blah for Burroughs: no thrills, but fewer chills than others in the industry experienced.

Revenues were up 4.7%, to $5.03 billion from $4.81 billion in 1984. Net income improved only 1%, to $248.2 million from $244.9 million in 1984. The 4.7% revenue gain included an 8.8% sales increase to $3.53 billion, an 18.8% decline in rentals to $369.5 million, and a 2.7% rise in service revenues to $1.14 billion.

Equipment shipments to commercial and government customers were up about 9%, to $2.6 billion, analysts estimate, compared to a 21% increase in 1984. R&D expenditures for the year were estimated at $285.2 million, up 7% from 1984.

Despite two major product announcements this year, the A-15 and V series, machines that match the performance specifications of IBM's 3090 series; the introduction of the A-10, a follow-on to the two-year-old A-9; and the continued success of the company's B-25 workstation, Burroughs showed only a nominal 8% increase in orders in 1985, with more strength overseas than in the U.S. Delays in shipping a new operating system for the V series may have contributed to the slow order growth in the U.S. International business comprised 35% of the company's total business in 1985, with Japan the largest customer, followed by the U.K., France, Brazil, and Australia.

The Memorex division continues to be plagued by problems in building thin-film disk drives, and by aggressive pricing at IBM and by the Japanese. Analysts estimate that the $1 billion division lost about $20 million for the year.

Both analysts and the company expect Memorex to at least break even in 1986.

If Memorex indeed returns to something like health, and volume shipments of the new A series and V series machines materialize as predicted, an improved financial picture is almost inevitable for Burroughs. In 1985, looking to cut costs, Burroughs closed eight plants and laid off 5,000 employees.

The DATAMATION/Cowen & Co. survey of mainframe sites indicates that a high proportion of Burroughs users plan to migrate to the new A and V series hardware; the results of this business, however, may not be felt until 1987. Nevertheless, the A and V series introductions have given the company a much-needed shot in the arm.

This spring the company introduced a new, in-house designed 80186-based microcomputer, the first micro line Burroughs has developed and produced itself. The product, the B-27, falls in the midrange of Burroughs workstation offerings.

Though the company's attempt to merge with Sperry last year failed, Burrough's management says the company is continuing to look for strategic partners with whom to merge or to acquire. From time to time, rumors surface that place Burroughs in merger —but so far they've proved untrue.

Revenue figures are in millions of dollars. Each increment represents $100 million.

5

FUJITSU LTD.

Marunouchi Center Bldg.
1-6 Marunouchi 1-Chome
Chiyoda-ku, Tokyo 100, Japan
(81-3) 211-5236

Fierce domestic competition from NEC and IBM combined with sluggish exports cast a shadow over Fujitsu's 1985 profits. DATAMATION estimates that Fujitsu's revenues rose only 6% and net income plummeted 32.9%. While dp revenues increased 12.2% to $4.3 billion (¥1.02 trillion), competition from IBM's Japanese subsidiary suggested that interesting times are ahead. Outstripping Big Blue in domestic sales, plug-compatible expert Fujitsu nevertheless lost ground to IBM in several important categories.

Healthy sales of IBM's Sierra series and 5500 family of workstations eroded Fujitsu's market share; the firm's November announcement of its top-of-the-line M-780 series of mainframes came a bit too late to stop IBM. In 1985 Big Blue took roughly 31% of the Japanese mainframe market, compared to Fujitsu's 29% stake. In the local micro market, IBM captured 22.9%, compared to Fujitsu's 18.3%.

As IBM turned up the heat, Fujitsu appeared to be moving away from complete plug compatibility. In its new M-780 family, for example, Fujitsu promised only to maintain compatibility with its own M-series operating system. Complicating the compatibility issue is an IBM allegation that Fujitsu illegally used IBM software.

Fujitsu continued to rely on Amdahl—49.5% owned by the Japanese mainframer—for technical collaboration and North American distribution of hardware made in Japan. Three new Fujitsu subsidiaries were established in North America in 1985 to beef up distribution and service networks for microcomputers and telecom equipment.

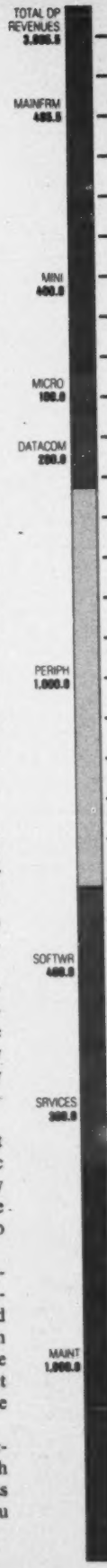
In Europe, Fujitsu merged its Spanish subsidiary with local dp company Secoinsa. The new company, 60% controlled by Fujitsu, will manufacture midsize mainframes for the European market by 1990. European observers speculate that Fujitsu may use Secoinsa as a beachhead in Europe, where it currently has only oem links.

For MFLOPS-hungry users, Fujitsu came out with the VP-series of supercomputers for scientific and engineering applications in 1985. But with only 18 orders to date, Fujitsu has a long way to go before supercomputer sales make a major contribution to total corporate revenues.

Partial deregulation of Japanese telecom provided opportunities for Fujitsu last year, and diversification into telecommunications equipment and data communications networks helped to brighten up a difficult year. Fujitsu took a leading share of the Japanese market for digital multiplexors and packet switching devices, but the strengthening yen at the end of 1985 cut into foreign sales.

Long pauses between new product introductions underscored the difficulty of keeping up with IBM in 1985. Shrinking profits from the PCM business and the software dispute with IBM are forcing Fujitsu to reexamine the risks of playing follow the leader.

Revenue figures are in millions of dollars. Each increment represents $100 million.



6

NCR CORP.

1700 South Patterson Blvd.
Dayton, Ohio 45479
(513) 445-5000

NCR Corp. squeaked through the slump of 1985 in one piece, but segments of the company's business, particularly office systems and workstations, took a real beating. Net income was off 8% to $315.2 million from 1984 earnings that had been inflated by a change in the tax laws. Corporate revenues were up 5.9%, to $4.32 billion from $4.07 billion in 1984. Revenues include an estimated 5% increase in sales, a 14% decline in rentals, and a 12% increase in service. R&D expenditures were $299 million, up 3.5% from $289 million in 1984.

Total dp revenues increased 5.8% in 1985, down from the 10.1% increase the company reported in 1984. Still, NCR showed real growth in the terminal market, with retail terminals and systems revenue up 15% in 1985, compared to a 3% increase in 1984. Financial terminals and systems revenue was up 4% in 1985 after gaining 1% in 1984.

Problem areas at the company include the personal computer, semiconductor, and office systems businesses, all of which were unprofitable. Some analysts estimate the company lost nearly $70 million among the three in 1985. Price wars decimated a disappointing pc market last year, and semiconductor revenue fell 8%, compared to a 7% gain in 1984. Moreover, the company has had virtually no luck selling its 32-bit chip set outside the company. More encouraging, NCR signed a deal with Hitachi to oem $25 million worth of 8-inch Winchester disk drives.

Revenue for general purpose data entry and inquiry workstations, manufacturing workstations, and micrographic systems declined 19%, compared to an increase of 14% in 1984 and 17% in 1983. NCR maintains, however, that trouble is a thing of the past in the personal computer area, where volumes are rising and NCR's dealer network is expanding rapidly. While the microcomputer area has been a sore spot for the company over the past few years—sales from the company's two micros were so low in 1984 that one model was taken out of domestic production—NCR apparently is banking on a stronger showing in 1986. The company expanded its micro line in 1985, adding the PC8, a high-end personal computer that can function as a multi-user system, and the PC6. NCR also added two supermicrocomputers to its Unix-based Tower line. It also introduced a retail personal computer aimed at small retailers, and some optimistic analysts are predicting that in 1986 NCR's pc business could break even.

The company rolled out several other new products last year, including two superminicomputers, the 9400 and 9500, which incorporate the company's 32-bit VLSI chip technology.

A new element in the corporate structure of NCR was the creation at the corporate level of a new division for product marketing and strategic planning. The company also expanded the product management area of the development and production divisions by adding several senior managers.

Revenue figures are in millions of dollars. Each increment represents $100 million.

7

NEC CORP.

33-1 Shiba 5-Chome
Minato-ku, Tokyo 108, Japan
(81-3) 454-1111

In 1985, NEC relied on a strong dp base to offset plunging profits in the chip business. NEC dp sales now account for 38% of total revenues. DATAMATION estimates that total corporate revenues rose almost 10% in 1985 to $9.9 billion (¥2.3 trillion), but net income sagged 3.1% in spite of the company's efforts to move to higher-margin businesses.

NEC has carved out an expanding market niche where IBM compatibility doesn't matter. Its ACOS mainframes run operating systems that reflect NEC's historic ties with General Electric and Honeywell. Unlike Hitachi and Fujitsu, NEC has been able to concentrate on mainframe technology and performance instead of anticipating IBM product announcement. Although NEC exports less than 15% of its computer production, strategic alliances with GEISCO and France's Bull may help to increase that share. GEISCO now uses NEC mainframes as the hub of an expanding international teleprocessing network.

NEC broadened its mainframe offerings by rolling out the ACOS 1500 series in 1985. Japanese public sector sales accounted for the majority of NEC's mainframe sales. In the Japanese office market, NEC competed strongly against Oki and Mitsubishi Electric with its MS series of 32-bit minis. Although NEC installed two of its SX-1 supercomputers in-house, it failed to announce an outside sale during 1985.

Long the front-runner in Japanese microcomputer production, NEC has widened that lead, taking 70% of the domestic market for 16-bit machines. But NEC's efforts to sell micros abroad never got off the ground in 1985, even with attempts at compatibility with IBM.

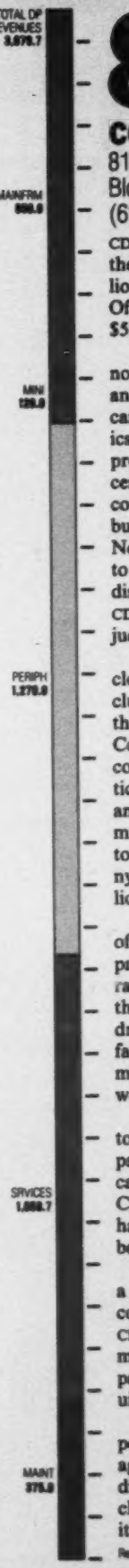
NEC bought Honeywell Information Systems Japan in 1985. Ironically, it was the BUNCH company that had helped NEC enter the computer business, with technical cooperation going back to their first agreement in 1962.

GE and NEC formed a joint venture, C&C International, aimed at integrating their international networks. The collaboration allows Japanese NEC-Net users to access GE's MARK III teleprocessing services. Eventually, if Japanese restrictions on international telecom are removed, linkage of NEC-Net and GE's MARK Net will form a global value-added network.

NEC is one of the few Japanese companies to have a proprietary microprocessor design. The latest additions to the V series cpu family, the V30 and V40, attracted rave reviews in 1985 as well as a lawsuit from Intel charging that NEC violated copyrights on the microcode. NEC promptly countersued but courts have yet to reach a final decision.

On the communications side, NEC still relies on quasi-privatized Nippon Telegraph and Telephone for about 25% of total sales. Digital switches, transmission equipment, switching systems, and optical components have been NEC's cash cow. Surging sales to the liberalized U.S. telecom market accounted for another 25% of telecom revenues, through its subsidiary, NEC America.

Revenue figures are in millions of dollars. Each increment represents $100 million.



8

CONTROL DATA CORP.

8100 34th Ave. S.
Bloomington, MN 55440
(612) 853-8100

CDC's financial performance in 1985 was the worst in the company's history. Total losses were $567.5 million, compared with a profit of $31.6 million in 1984. Of that loss, the computer business accounted for $562.7 million.

Amid 1985's financial crisis came the announcement that the company's founder, chairman and ceo William C. Norris, was retiring. Norris, 74, came under increasing fire from the company's critics, particularly on Wall Street, who blame CDC's problems on his leadership and his philosophies concerning corporate social responsibilities. Plato, the company's computer-based education and training business, has often been at the crux of such criticism. Norris believes Plato, which cost some $900 million to develop, is the future of the company, but many disagree. Norris's retirement and the appointment of CDC president Robert M. Price as successor is widely judged a a positive step.

CDC reduced its work force by 10,000 and closed or sold six plants. It also sold a few units, including its business products division. At press time, the company had a letter of intent from Allen and Co., a New York investment house, for the sale of the company's profitable Ticketron unit, a computerized ticketing service. The sale price was not disclosed; analysts estimate Ticketron had revenues of $100 million in 1985. Robert Price said in January that the total 1985 revenue of the businesses that the company dropped by first quarter 1986 equaled $400 million, 9% of computer business revenues.

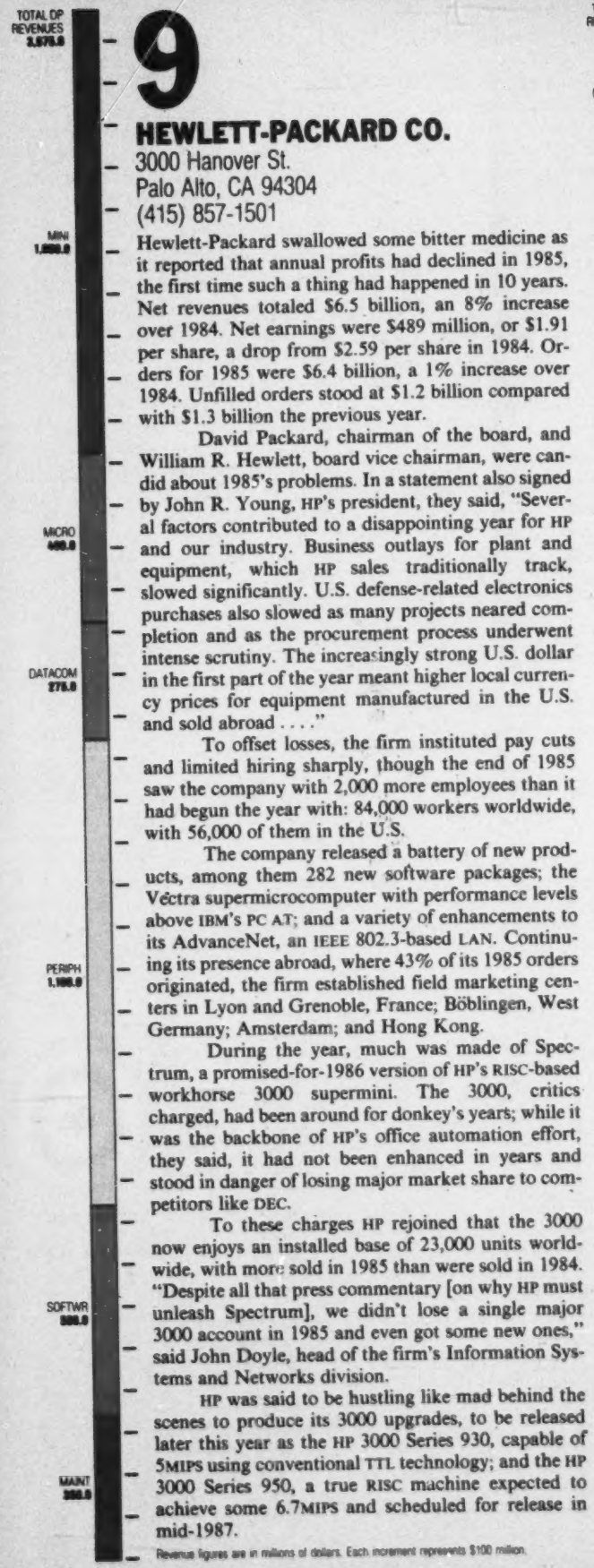
Meanwhile, CDC withdrew the proposed sale of money-losing Commercial Credit Corp. The company restructured the unit, establishing it as a separate entitity from the parent company, and reduced the unit's size by two thirds. Following the withdrawal of the sale of Commercial Credit, CDC defaulted on short-term loans to the tune of $380 million, but negotiations to restructure the loans were successful. CDC has until year's end to pony up.

Overall orders in computer systems are said to be good, with demand for midrange Cyber 180s particularly encouraging. Chrysler Corp. also became a CDC customer, ordering $7 million worth of Cyber 180s. Officials in the computer systems group have hinted at possible additions to the Cyber line to be introduced in 1986.

CDC failed to attract investors for ETA Systems, a company spin-off that is manufacturing a supercomputer for release in the fourth quarter of 1986. CDC says it is not actively looking for investors anymore, but is not ruling out the possibility of future partners. ETA was underwritten by a $40 million equity investment by CDC.

Company officials say it is turning from a corporate culture of project management to profit management. No one doubts that CDC will survive this dismal period, but the question is, when the smoke clears will it emerge as a viable, innovative, and profitable supplier or a mere shadow of its former self?

Revenue figures are in millions of dollars. Each increment represents $100 million.



9

HEWLETT-PACKARD CO.

3000 Hanover St.
Palo Alto, CA 94304
(415) 857-1501

Hewlett-Packard swallowed some bitter medicine as it reported that annual profits had declined in 1985, the first time such a thing had happened in 10 years. Net revenues totaled $6.5 billion, an 8% increase over 1984. Net earnings were $489 million, or $1.91 per share, a drop from $2.59 per share in 1984. Orders for 1985 were $6.4 billion, a 1% increase over 1984. Unfilled orders stood at $1.2 billion compared with $1.3 billion the previous year.

David Packard, chairman of the board, and William R. Hewlett, board vice chairman, were candid about 1985's problems. In a statement also signed by John R. Young, HP's president, they said, "Several factors contributed to a disappointing year for HP and our industry. Business outlays for plant and equipment, which HP sales traditionally track, slowed significantly. U.S. defense-related electronics purchases also slowed as many projects neared completion and as the procurement process underwent intense scrutiny. The increasingly strong U.S. dollar in the first part of the year meant higher local currency prices for equipment manufactured in the U.S. and sold abroad . . . ."

To offset losses, the firm instituted pay cuts and limited hiring sharply, though the end of 1985 saw the company with 2,000 more employees than it had begun the year with: 84,000 workers worldwide, with 56,000 of them in the U.S.

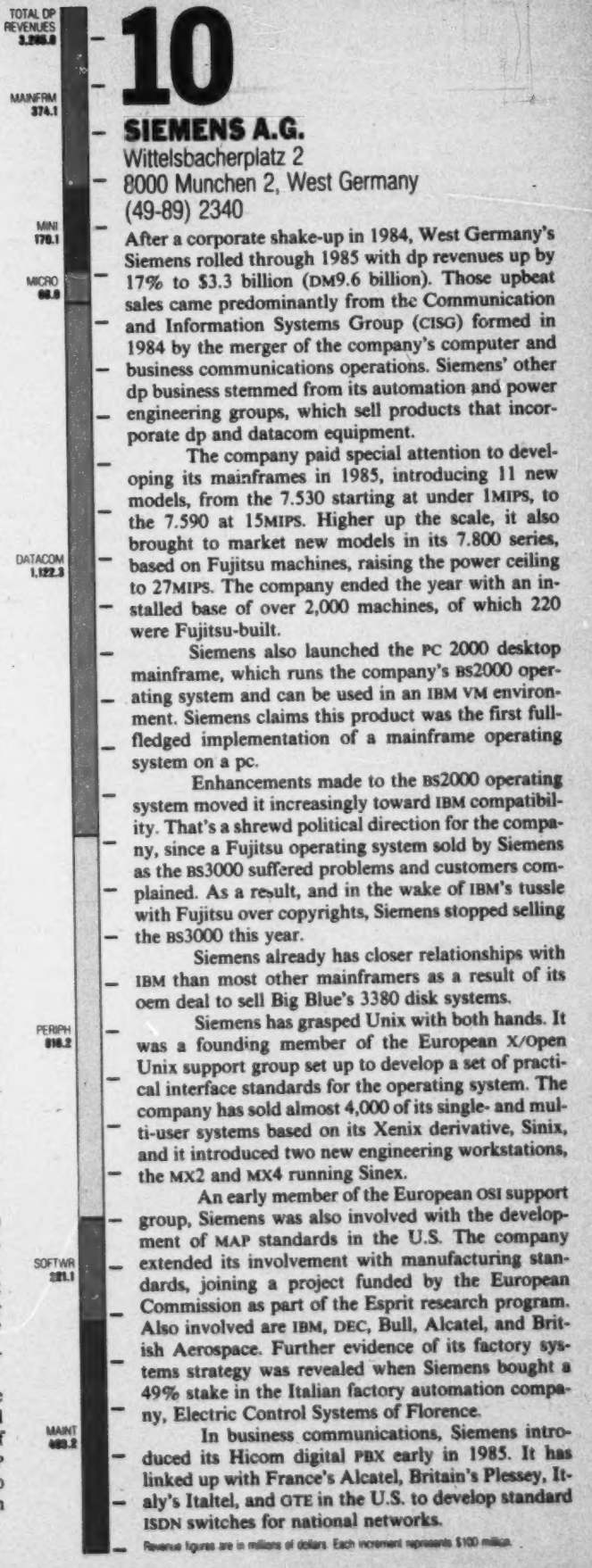
The company released a battery of new products, among them 282 new software packages; the Vectra supermicrocomputer with performance levels above IBM's PC AT; and a variety of enhancements to its AdvanceNet, an IEEE 802.3-based LAN. Continuing its presence abroad, where 43% of its 1985 orders originated, the firm established field marketing centers in Lyon and Grenoble, France; Böblingen, West Germany; Amsterdam; and Hong Kong.

During the year, much was made of Spectrum, a promised-for-1986 version of HP's RISC-based workhorse 3000 supermini. The 3000, critics charged, had been around for donkey's years; while it was the backbone of HP's office automation effort, they said, it had not been enhanced in years and stood in danger of losing major market share to competitors like DEC.

To these charges HP rejoined that the 3000 now enjoys an installed base of 23,000 units worldwide, with more sold in 1985 than were sold in 1984. "Despite all that press commentary [on why HP must unleash Spectrum], we didn't lose a single major 3000 account in 1985 and even got some new ones," said John Doyle, head of the firm's Information Systems and Networks division.

HP was said to be hustling like mad behind the scenes to produce its 3000 upgrades, to be released later this year as the HP 3000 Series 930, capable of 5MIPS using conventional TTL technology; and the HP 3000 Series 950, a true RISC machine expected to achieve some 6.7MIPS and scheduled for release in mid-1987.

Revenue figures are in millions of dollars. Each increment represents $100 million.



10

SIEMENS A.G.

Wittelsbacherplatz 2
8000 Munchen 2, West Germany
(49-89) 2340

After a corporate shake-up in 1984, West Germany's Siemens rolled through 1985 with dp revenues up by 17% to $3.3 billion (DM9.6 billion). Those upbeat sales came predominantly from the Communication and Information Systems Group (CISG) formed in 1984 by the merger of the company's computer and business communications operations. Siemens' other dp business stemmed from its automation and power engineering groups, which sell products that incorporate dp and datacom equipment.

The company paid special attention to developing its mainframes in 1985, introducing 11 new models, from the 7.530 starting at under 1MIPS, to the 7.590 at 15MIPS. Higher up the scale, it also brought to market new models in its 7.800 series, based on Fujitsu machines, raising the power ceiling to 27MIPS. The company ended the year with an installed base of over 2,000 machines, of which 220 were Fujitsu-built.

Siemens also launched the PC 2000 desktop mainframe, which runs the company's BS2000 operating system and can be used in an IBM VM environment. Siemens claims this product was the first full-fledged implementation of a mainframe operating system on a pc.

Enhancements made to the BS2000 operating system moved it increasingly toward IBM compatibility. That's a shrewd political direction for the company, since a Fujitsu operating system sold by Siemens as the BS3000 suffered problems and customers complained. As a result, and in the wake of IBM's tussle with Fujitsu over copyrights, Siemens stopped selling the BS3000 this year.

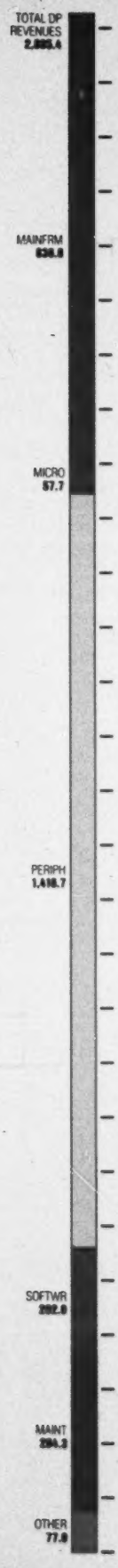
Siemens already has closer relationships with IBM than most other mainframers as a result of its oem deal to sell Big Blue's 3380 disk systems.

Siemens has grasped Unix with both hands. It was a founding member of the European X/Open Unix support group set up to develop a set of practical interface standards for the operating system. The company has sold almost 4,000 of its single- and multi-user systems based on its Xenix derivative, Sinix, and it introduced two new engineering workstations, the MX2 and MX4 running Sinex.

An early member of the European OSI support group, Siemens was also involved with the development of MAP standards in the U.S. The company extended its involvement with manufacturing standards, joining a project funded by the European Commission as part of the Esprit research program. Also involved are IBM, DEC, Bull, Alcatel, and British Aerospace. Further evidence of its factory systems strategy was revealed when Siemens bought a 49% stake in the Italian factory automation company, Electric Control Systems of Florence.

In business communications, Siemens introduced its Hicom digital PBX early in 1985. It has linked up with France's Alcatel, Britain's Plessey, Italy's Italtel, and GTE in the U.S. to develop standard ISDN switches for national networks.

Revenue figures are in millions of dollars. Each increment represents $100 million.



11

HITACHI LTD.

Kanda-Surugadai 4-Chome
Chiyoda-ku, Tokyo 101, Japan
(81-3) 258-1111

Hitachi proved in 1985 that it was not only tough but also tenacious when it comes to holding the compatible line. DATAMATION estimates that Hitachi's dp revenues grew 13% to $2.89 billion (¥687 billion), despite cutthroat competition at home and shrinking sales abroad. But profits for the corporation as a whole suffered, declining 8.1% to $768.6 million.

Hitachi relies heavily on its R&D muscle to meet the competitive challenge presented by Big Blue. The company rolled out its M-682H and M-680H mainframes in quick response to Sierra. By year-end, Hitachi had received orders for 50 Sierra-equivalent machines, most of those orders coming from the company's loyal customer base at Japanese banks and securities firms. The pcmer also landed more than 15 contracts for mainframe systems from the Bank of China.

Right after IBM began early deliveries of its new double-density disk drives, Hitachi unveiled its own models. With almost 20% of its computer division's sales coming from disk drives, Hitachi pinned its hopes on speedy introduction of the double-density drives to save market share. Production of these drives reached 300 units per month in 1985.

Hitachi had a good year from a peripherals point of view. Sales of optical storage devices, Winchester drives, and laser printers contributed about 50% of Hitachi's data processing revenues.

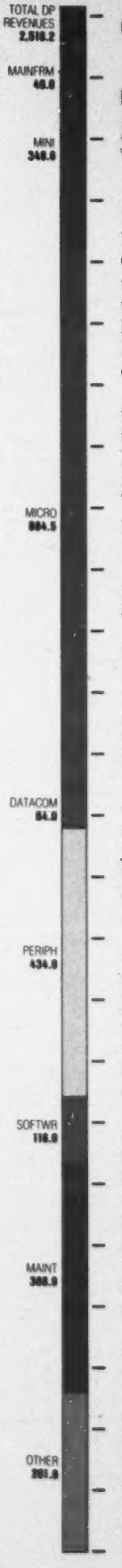
Business was decidedly slower in the supercomputer realm. Hitachi's S-810 series simply couldn't match Fujitsu's line of supercomputers when it came to benchmarking and price/performance. The company hopes it will have better luck with the S-810/5, a low-end supercomputer that it introduced at the end of the year.

Hitachi continued to rely on National Advanced Systems (NAS) to market its mainframe wares in the North American market. A subsidiary of National Semiconductor, NAS may be in trouble with Hitachi, which has heavy stakes in the chip business. The Japanese company is rumored to be looking for alternative distributors and investigating ways to beef up its American computer sales and service network. Things are a lot calmer in Europe, where Hitachi mainframes and peripherals are sold by BASF in West Germany and by Olivetti in Italy.

Meanwhile another American alliance may be in the offing this year. Sperry, which hankers for Hitachi's expertise in cpus, VLSI, and peripherals, held tie-up talks with Hitachi in 1985. No agreements were announced. Hitachi was rumored to be asking for some of Sperry's holdings in Nippon Univac Kaisha, which could help the firm pick up its pace in applications software development and expand its user base in the Japanese financial sector.

Fear of protectionism coupled with the rising yen prompted Hitachi to go ahead with plans to build a 5GB disk drive manufacturing plant in Norman, Okla. This is a major move by Hitachi, since its production has always been on its domestic turf.

Revenue figures are in millions of dollars. Each increment represents $100 million.



12

ING. C. OLIVETTI & CO. S.P.A.

Via G. Jervis, 77
10015 Ivrea, Italy
(39-125) 525

Under the guidance of chairman Carlo De Benedetti, Olivetti elbowed Apple out of the number two spot in the European personal computer market and more than doubled its worldwide pc sales. "It was definitely the year of the pc at Olivetti," recalls Vittorio Levi, the company's executive vice president of operations.

Nor was business bad elsewhere. Olivetti's total worldwide dp revenues were up by a massive 42% in local currency to L6.14 trillion ($2.52 billion). Mainframe sales shot up by 115%, datacom revenues rose by 23%, and software sales jumped by 35%. The only blot on the order book was in the minicomputer area: revenues were up only 6%.

But it was the pc side that really shone during 1985. Personal computer sales hit $884.5 million last year, representing a surge in business of 113.6% and accounting for 35% of the company's total dp take.

Much of this pc surge came from Olivetti's U.S. marketing deals with its transatlantic partner AT&T, and with Xerox which signed up to sell Olivetti pcs early last year. Pc shipments in 1985 reflect this U.S. activity—167,000 machines were shipped in Europe, 18,000 to the Far East and 190,000 to the U.S.

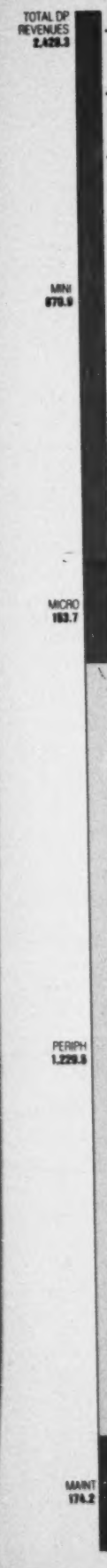
The U.S. was the company's largest export market last year, thanks to AT&T and Xerox. Olivetti's own foray into the U.S., through its loss-ridden joint venture Docutel/Olivetti, had little to do with the expansion of business. This year could be different following the acquisition last March of the remaining 54% of Docutel for $20.2 million.

In 1985, the company also purchased the European marketing network of Exxon Office Systems, bought a 49% stake in Start Computer Centre, the West German retailing firm, signed a strategic deal with Toshiba giving the Japanese company a 20% share in Olivetti's Japanese subsidiary, and took an 80% holding in the troubled U.K. educational micro company Acorn.

Olivetti also moved aggressively in the mainframe market last year. Claiming to be the number two in the Italian mainframe sector with an installed base of 115 Hitachi machines, the company signed up U.K. IBM specialist Fee of Watford to sell the systems in the U.K.; it is looking for similar partners in other European countries. But Olivetti is being cautious because previous attempts at selling mainframes outside Italy during the early '80s were disasters.

But perhaps the trend to watch in 1986 is further delegation of management responsibility at Olivetti. Executive vice president Levi and Elserino Piol, vice president of corporate strategy and development, took increasingly active roles in running the firm in 1985. De Benedetti is tied to the company through a 10-year employment contract with AT&T, and okays all strategic policies at the company, but with Olivetti holding steady at high speed, he can now afford to spend more time in the backseat.

Revenue figures are in millions of dollars. Each increment represents $100 million.



13

WANG LABORATORIES INC.

1 Industrial Ave.
Lowell, MA 01851
(617) 459-5000

The issue of customer loyalty dogged Wang in 1985. A stagnant product cycle and the late delivery of key strategic products—Wang Office and the high-end vs 300 supermini—conspired to sap user confidence in the first half of the year. After a record $109 million loss in the quarter ending June 30 and the resignation of president John Cunningham, founder An Wang firmly reseized the reins of the company. The company began to stabilize in the September quarter with record orders of $700 million, but the damage had been done. Total sales for the calendar year were virtually the same as 1984, at $2.43 billion, and the bottom line was grisly, with losses of $63.3 million in contrast to 1984's net profit of $230.7 million.

As Wang accelerated its shift from word processing to dp products, the company lost ground to IBM, DEC, and Data General. And some of Wang's largest customers began to doubt its ability to offer both integrated solutions and the crucial "three Cs": coexistence, compatibility, and communication with IBM.

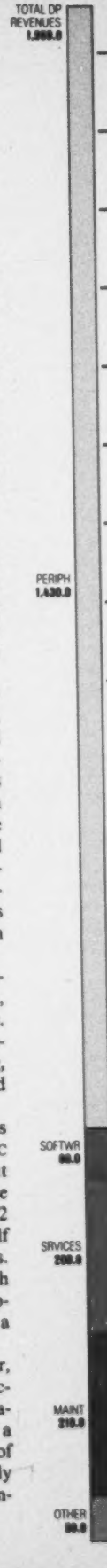
By midyear the company was placing new emphasis on the old rule, "Put the customer first." A notable step was a $38 million deal with the Hartford Insurance Group subsidiary, HITECH, to develop programmer productivity tools and workstations for MIS shops. Wang's hope was that the relationship with HITECH would help educate its own people in the ways of MIS. Because its experience has been in word processing, not dp, Wang has tended to use its customers as alpha sites for new dp offerings. Bad publicity about delivery of some unproved systems undermined customers' already shaky confidence in Wang's dp skills.

In June the company created a new independent subsidiary, Wang Information Services Corp., to offer remote information services to its customers. Included for sale, lease, or rental are nationwide electronic voice mail, telecommunications switching, database, and Wang Office services—even a shared tenant-smart building service.

One strategy Wang chose to counter its sales slump was emulating the SNA software and IBM PC support strategies of DEC and Data General. But Wang is generally viewed as a year behind these firms in providing such links, especially in the LU 6.2 area. Wang is trying, however, to differentiate itself from its rivals by offering PBX systems to MIS shops. To this end the company bought a 40% share—with an option to raise its stake to 51%—in the PBX supplier Telenova, Los Gatos, Calif. Wang already had a minority position in Intecom, Allen, Texas.

In the Pacific market, Wang had a lively year, entering three joint ventures in China and announcing a Japanese language pc. In Australia the company released progress reports on its installation of a massive, nationwide network for the Department of Social Services: eight SNA networks will eventually link a variety of Amdahl mainframes and Wang minis—with not a single IBM system in sight.

Revenue figures are in millions of dollars. Each increment represents $100 million.



14

XEROX CORP.

P.O. Box 1600
Stamford, CT 06904
(203) 329-8700

Xerox Corp.'s information systems business grew 14% in 1985, stopping just shy of the $2 billion mark. According to Xerox, the growth provides proof that its oft-maligned efforts to leverage its way into the office systems business are succeeding and that its future doesn't depend totally on copiers.

The increase was due largely to strong growth in electronic printing systems, workstations, and electronic typewriters; a decline was seen in revenues from Diablo impact printers; and growth was sluggish in information processing and pc products.

Gross profit from the information systems was $679 million in 1985, up 17% from $581 million in 1984. Overall profits were up 63% to $475 million on total revenues of $8.73 billion. About $800 million of this was from discontinued operations.

Xerox began a major overhaul of its systems product line, introducing new workstations of its own design, Olivetti-built pcs, electronic printers, networking gear, and enhanced software. The company hoped the new products would reestablish momentum in the office systems market that Xerox had lost during the previous four years. Stuck with high-priced workstations to sell, Xerox had proved unable to respond to the widely accepted IBM PC.

Besides revamping its products, Xerox also concentrated on marketing packaged combinations of the new products, designed to help specific corporate departments prepare and publish their documents. For instance, one package is designed to prepare technical documents; another produces catalogs and other documents in high volume. Several of the systems rely on minicomputers built by Digital Equipment Corp.

As it has been for several years, Xerox's strategy in office automation is to provide customers with a wide range of machines for preparing and producing documents. This strategy relies heavily on applying copier technology to electronic printing products and using workstation and other technologies developed at its Palo Alto research labs. Xerox is leaving traditional dp markets to IBM and other competitors, although it says it intends to make its systems communicate with IBM and DEC hosts. Meanwhile, the company continues to sell manufacturing-related computing services and to make its field service force available to other manufacturers.

Other events: the once-pioneering Shugart Associates subsidiary, which manufactures floppy disk drives, was divested; Xerox adapted its 6085 workstation to the artificial intelligence market—the company is one of three major AI-specific hardware suppliers—and continued to expand its AI software offerings; and the company teamed up with AT&T to push the latter's StarLan office network.

A major drag on corporate earnings last year was the firm's financial services division, particularly the troubled Crum & Forster insurance subsidiary, but analysts predict the division will eventually contribute to Xerox's bottom line.

Revenue figures are in millions of dollars. Each increment represents $100 million.

15

HONEYWELL INC.

Honeywell Plaza
Minneapolis, MN 55408
(612) 870-5200

Like other makers of mainframes, Honeywell Inc.'s Information Systems (HIS) unit found it hard to achieve traditional levels of growth in 1985. HIS in 1985 recorded revenues of $1.95 billion, up 6.9% from the $1.83 billion inked the previous year. The division's operating profits were $200 million, up from $180 million in 1984, and provided more than a third of the parent corporation's operating profits. The corporation as a whole showed net income for the year of $282 million, compared to $239 million in 1984. Total corporate revenues were $6.62 billion, up from $6.07 billion the previous year.

Honeywell boasted that two key performance measures both showed improvement in 1985, though neither met corporate goals. Return on investment increased to 10.6%, against a long-term goal of 14%, and return on equity grew to 11.8%, inching closer to a hoped for return of 16%.

Honeywell said it benefited from strong demand for large-scale computers, which offset a "soft" market for small machines. So soft, indeed, was the small machine market that Honeywell shuttered its Small Computer and Office Systems Group factories for four weeks during 1985 and laid off 120 workers. DATAMATION estimates that Honeywell's 1985 minicomputer revenues were off 33.3%.

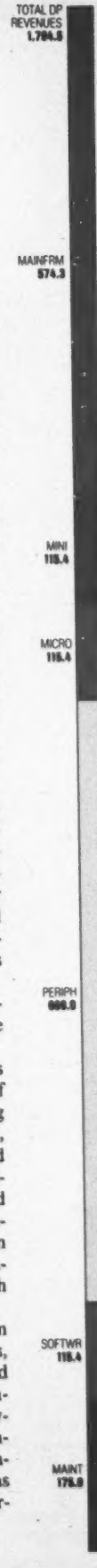
Honeywell continues to use its strength in industrial control markets to gain new computer customers. It aims to help manufacturing companies—which make up about a third of the company's customers—integrate their Honeywell factory-floor gear with Honeywell computer systems. Honeywell promises to provide a wide range of mainframe, office automation, and telecommunications products to accomplish this integration.

New integrated systems for automobile manufacture and for process control in steel mills were introduced in 1985.

The company's DPS 8/70 line of mainframes seems ripe for replacement, as does the DPS 6 line of minicomputers. Honeywell last year began winding down its support of the Multics operating system, which has not achieved nearly as wide an installed base as the GCOS system. Like most non-IBM mainframe suppliers, Honeywell has been unable to build all the products its customers need. As a result, it resells large-scale mainframes supplied by NEC in Japan and personal computers built by unidentified Japanese vendors. The NEC-built DPS 90s compete with IBM's 308X and 3090 mainframes.

Honeywell's Solid State Electronics Division began work last year on a plant in Colorado Springs, where, beginning early next year, it plans to build very high speed integrated circuits (VHSICs). Honeywell continues to participate in the military-funded VHSIC program, which is pushing semiconductor technology for aerospace, telecommunications, and military applications. Honeywell has hopes that the VHSIC project will spin off commercially applicable technologies.

Revenue figures are in millions of dollars. Each increment represents $100 million.



16

GROUPE BULL

121 Avenue de Malakoff
75116 Paris, France
(33-1) 450-29090

Bull saw red no more in 1985. For the first time since 1981, the company proudly announced a profit, honoring the pledge it had given to its principal shareholder, the French government. The company owes much of its current health to the government's investment of FF4.5 billion since 1982.

Last year Bull, which derives all its revenue from dp, pulled in $1.79 billion (FF16.1 billion), up a healthy 15.3%. Net earnings of $12.3 million (FF110.2 million), though modest, were better than expected from a company that had piled up $336 million in losses in the last three years.

Export revenues grew at a faster clip than domestic sales during 1985. The group's French revenues of $1.1 billion appear to give it about a 19% share of its home dp market, although it claims to have a 22% stake. Bull's major outside market is West Germany, which accounts for roughly 28% of foreign sales. But Bull was also busy in the rest of the world. In January Bull won a $7 million contract from the Spanish Ministry of Economy and Finance. It was the biggest order the Spanish government had ever placed for dp equipment. That was followed in April by a $6.5 million order from Chinese universities and research organizations.

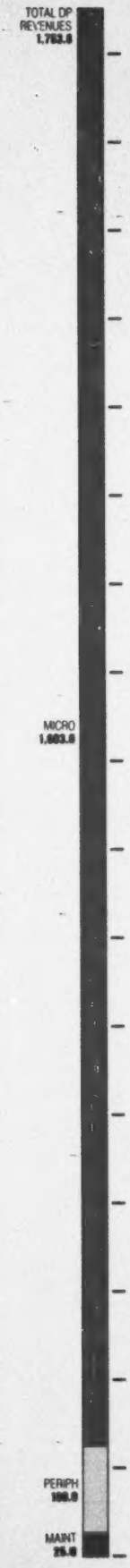
Bull's biggest domestic announcement was the top-of-the-line DPS 90 mainframe, courtesy of Japan's NEC. During the year, the French firm extended several pacts with NEC. Bull agreed to integrate NEC's System 750 mainframe into Bull's DPS 7 product line. Bull also unveiled two new DPS 88 mainframes and introduced the SPS 7, a scientific minicomputer that runs the Spix operating system based on Unix System V. The new system complements the SPS 5 mini and the SPS 9 supermini, both of which were enhanced during 1985. Improvements were also made to the DPS 4, DPS 7, and DPS 8/88 mainframes.

Continuing its policy of providing communications links between its systems and others, Bull introduced a new networking interface, the DNS C. The interface, which corresponds to the first five layers of the OSI model, connects Bull and IBM systems.

Late in '84 Bull had finally opted for IBM PC compatibility. The wisdom of this late and reluctant decision was borne out by big demand for its PC-compatible Micral 30 in 1985. The company had aimed for a 7% share of the French micro market and actually wound up with 10%. Bull has now added an AT compatible to its micro line.

Cooperation with other suppliers is a hallmark of Bull's strategy under chairman Jacques Stern. Last year Bull joined five other European manufacturers to form the X/Open Group, which will work on developing a common application software environment based upon Unix. The company also signed agreements last year with two French telecommunications companies, Jeumont-Schneider and Telic-Alcatel. The French firm is also working with Italy's Olivetti to come up with a new generation of automated banking machines.

Revenue figures are in millions of dollars. Each increment represents $100 million.



17

APPLE COMPUTER INC.

20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010

Apple Computer Inc. finally decided to play in IBM's ballpark in 1985, a tumultuous year in which sales shrank by 7.5% compared with 75% growth the year before. Apple fell victim to a personal computer industry slowdown and, more important, to the reality that true growth lies in the corporate marketplace, where Apple is weakest. The bottom line: net income in 1985 was off 30% to $72 million.

"We're committed to building the third leg of our business," said Apple's chairman, John Sculley, last fall, explaining that the first two were the home and education markets. "To get there, we simply must have systems solutions in business and education by 1986," he added.

Some observers wonder just how Apple will fare with software houses and computer dealers. The software houses will have to develop programs to connect the 32-bit Macintosh computer to mainframes and minis, and Apple must rely on dealers to sell these networking capabilities. But it is evident the company has no other way to go if it is to survive.

Apple recorded sales of $1.9 billion in its fiscal year 1985, which ended Sept. 28, 1985, up 27% over 1984 sales of $1.5 billion. Its net income dropped to $61 million, the lowest in four years. The company's efforts to trim costs and to reorganize attracted headlines in both the trade and popular presses as it laid off 1,200 people, chopped swollen inventories by $152.4 million to a more manageable $108.8 million, and forced the resignation of its chairman and founder, Steve Jobs. In September, shortly after the company absorbed the Macintosh division, which Jobs headed, into another group, Jobs left to form a new company, taking along some key Apple technical people. The company threatened a trade secrets lawsuit, but dropped it after Jobs agreed to allow Apple to inspect prototypes of his new company's products.

Job's departure lent needed credibility to Apple's intention to develop software that would permit the Macintosh to function in local area networks that use IBM communication standards. Sculley said the company would introduce such products sometime in 1986, but was vague as to when in 1986. In the past, Apple had promised to close the gaps in its office products line, but products were slow to emerge.

How the company will market its communications products is perplexing: it must try not to alienate its dealers while at the same time selling directly into the corporate market. Some observers think the company will do this by compensating dealers in whose territories direct sales are made.

Despite its belt-tightening, Apple has maintained a strong R&D effort. It spent $72.5 million in 1985 on research and development and intends to increase this amount by 50% in 1986. It is about to take delivery on a $4.5 million Cray Research supercomputer, the Cray X-MP. It will use the computer to simulate future products, evaluating them without having to build them.

Revenue figures are in millions of dollars. Each increment represents $100 million.

18

AT&T

550 Madison Ave.
New York, NY 10022
(212) 605-5500

From the splendid pediment of AT&T's headquarters in New York, pink granite descends to ground level: down there, the building doesn't work at all. Clumsy gray cast-iron garden furniture and huge leaden planters make pedestrian traffic difficult. People look uncomfortable here.

AT&T's dp business has been far too much like its building: lofty ambitions that don't seem to make it in the real world. It's a $34.9 billion corporation made up of an immense cash cow, hemmed in by turnaround situations. Of the computer operation, chairman Charles Brown said, it isn't going "as well as I would like to see it." Still, DATAMATION estimates AT&T's dp revenues were up 11.9% to $1.5 billion. Dp did better than the corporation as a whole, where revenues were up 5.1% to $34.9 billion. Overall profits were up 13.6% to $1.5 billion. This represented a 10.1% return on equity, half what the company has identified as its target.

The bulk of AT&T's money continues to come from telecommunications, most of it voice. Not all of this service is as profitable as AT&T would like. About 80% of the business is interstate and doing fine. But about 20% is shorter-haul intrastate: in 1984, it cost AT&T 15 cents a share to supply this service and it isn't expected to break even until this year. Also ripe for turnaround are leased private lines, producing only 3% or 4% profit.

Unix, the operating system developed at the company's Bell Laboratories, continues to be a top priority, but strategy is shifting. While vendors bring more Unix machines to market, it is no longer touted as the universal operating system. Unix is now more realistically described as a superb programming tool. In late June, the Department of Defense awarded AT&T a $946 million contract to provide, install, and maintain Unix System V computer systems.

AT&T was late coming into the market for all-digital central office switches, and lost business to competitors like Northern Telecom. But by the end of 1985, almost 9 million lines of AT&T's fully digital, modular central office switch, the 5ESS, had been shipped. Another 6.5 million lines will be delivered in 1986. In Europe, the switch was chosen by the Netherlands PTT.

Also in Europe, AT&T's minicomputers were doing fairly well: in 1985, AT&T's partner Olivetti sold 1,200 of the machines. Olivetti also plans to introduce AT&T digital PBXs to the U.K. and to Italy.

In the U.S., AT&T was accused of selling its 2B and 3B computers below cost. The company denied the rumor on the one hand and did some ambitious cost-cutting on the other, announcing that 24,000 jobs would be eliminated from its Information Systems division.

Meanwhile, the best news for AT&T may have been the voiding of some parts of the federal government's Computer Inquiry II requirements: AT&T can use the same sales force for both Information Systems and Communications.

Revenue figures are in millions of dollars. Each increment represents $100 million.

19

TRW INC.

1900 Richmond Rd.
Cleveland, OH 44124
(216) 291-7000

Even a company as broadly diversified as TRW fared poorly in 1985. The Cleveland-based electronics, space, and automotive organization reported a 10% increase in revenues to $5.92 billion, but its earnings dropped precipitously: after 1984's healthy profit of $266.8 million, 1985's loss of $7.1 million looks especially sickly. Part of the problem: TRW's biggest earnings producer, the electronics and space systems operation, which accounts for 57% of revenues and 50% of operating profits, suffered an 11% drop in profits because of lower prices and cost adjustments on government contracts.

On the other hand, the company's data processing revenues were good news for TRW shareholders: they account for a little more than a quarter of total sales, and rose 31% to $1.45 billion. A huge share of these revenues were sales of software, which rose 33% to $1.1 billion in 1985.

Last year TRW spent a large chunk of its $1.5 billion in R&D money on software development, $100 million more than the year before. One result is that TRW's software productivity has doubled since 1980, according to the company's financial reports. Last year, TRW joined 12 other software using organizations to create the Software Productivity Consortium, which is a centralized research facility to streamline and improve production of aerospace software.

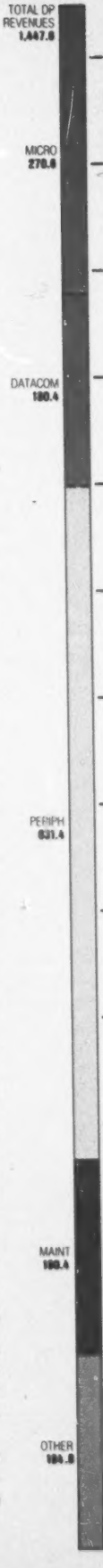
The company's computer services revenues rose $75 million to $175 million as the company made acquisitions to expand its credit reporting activities. Among the moves were acquisitions of firms that took TRW's credit reporting activities to Ohio. It also launched a service to provide commercial customers with market share data on credit accounts and added a new service for consumers called TRW Credentials. Under that plan, customers applying for loans pay a fee to get instant access to their credit files.

In the maintenance and repair business, the company reported 1985 revenues of $175 million, (compared with $150 million a year ago). In this fast-growing part of the dp business, TRW is the largest third-party player. Last year it extended this business into the repair of medical electronic equipment and the refurbishment of large mainframe computers.

The company's other major activity, the car and truck components business, accounted for 36% of the company's 1985 sales and 41% of its profit. Representing the "T" in TRW, the old Thomsen operation is one of the 10 largest independent suppliers of products for cars, trucks, buses, farm equipment, and other off-highway vehicles. In 1985, following the acquisition of North American facilities operated by Firestone Tire and Rubber, it became the world's largest independent supplier of seat belts.

As to the shareholders mentioned above, by the end of 1985 there were fewer of them: the company bought back 21% of its common stock, or some 7.7 million shares.

Revenue figures are in millions of dollars. Each increment represents $100 million.



20

MATSUSHITA ELECTRIC INDUSTRIAL CO. LTD.

1006 Kadoma, Kadoma City
Osaka 571, Japan
(81-6) 908-1121

Matsushita Electric Industrial Co. Ltd. (MEI), the world's largest consumer electronics company, is staking a good part of its future on data processing. Judging from the company's dp performance last year, that may be a wise bet. In 1985 Matsushita Electric's dp revenues rose an estimated 30% to $1.4 billion (¥344 billion). As a result, dp now accounts for 6.8% of total corporate revenues.

Over the last few years, MEI's production prowess has brought Big Blue to MEI's door. The Japanese firm has several big oem contracts with IBM for floppy disk drives and terminal equipment. MEI produces IBM Japan's JX personal computer and various components for the 5500 workstations.

Matsushita hopes to double its office automation sales over the next three years by beefing up software. It is already the world's largest producer of facsimile machines. Last year MEI jointly developed with Peking University a desktop Chinese language word processor. The new unit, called the Panaword Handwritten Character Processor, uses a new and faster input technique pioneered by the university.

Matsushita is also Japan's leading maker of industrial robots. MEI devotes about half of its total computer assisted manufacturing development to in-house sales. But outside sales of industrial robots were up an estimated 30% to $184.4 million (¥44 billion) in 1985.

Sales of personal computers and peripherals slowed down during the year. MEI produces floppy disk drives at its Matsushita Communications subsidiary. Matsushita had accounted for roughly 15% of total Japanese shipments of floppies when production peaked back in 1984.

Earlier this year Matsushita signed two big marketing deals with U.S. companies. In January, MEI finalized a pact that will enable it to sell Harris equipment in the Far East. A month later the company's trading and marketing arm, Matsushita Electric Trading Co., signed an agreement to sell Sequent Computer Systems' superminis in Japan. The Japanese will initially market the Oregon firm's Balance 8000 line of parallel processing machines. The Sequent wares will be sold through the affiliated Matsubo Equipment & Instrument Corp. MEI also has an agreement to market in Japan the Transputer, the parallel processor developed by Britain's Inmos. In another deal, when Shugart stopped ordering disk drives, Matsushita turned around and bought the ailing company from Xerox.

Matsushita actively participates in dp research efforts sponsored by the Japanese government. It is one of the eight Japanese corporations involved in the Ministry for International Trade & Industry's (MITI) Institute for New Generation Computer Technology. Matsushita engineers are also participating in a research consortium in western Japan that hopes to come up with artifical intelligence applications in consumer electronics.

Revenue figures are in millions of dollars. Each increment represents $100 million.

21

TOSHIBA CORP.

1-1 Shibaura 1-Chome
Minato-ku, Tokyo 105, Japan
(81-3) 457-2105

Last year was a time of tie-ups and takeovers for Toshiba, alliances and acquisitions that helped the energy and electronics conglomerate weather the 1985 slump in semiconductors and the growing value of the yen. DATAMATION estimates that Toshiba's 1985 dp revenues shot up 30%. The company had dp revenues of $1.4 billion (¥335.4 billion), roughly 10% of total corporate revenues.

Last year an agreement with Olivetti gave Toshiba a 20% equity stake in the Italian company's Japanese subsidiary. The deal should secure Toshiba's position as an oem supplier of peripherals and semiconductors to Olivetti's European and Japanese operations. The company's communications capabilities were also beefed up through its ongoing collaboration with AT&T, which has a 25% interest in Olivetti. Under a var agreement, Toshiba markets a Japanese adaptation of AT&T's Datakit virtual circuit switch in Japan.

The Japanese telecom deregulation drive that got under way in April 1985 will open up new communications opportunities for high-tech companies. Toshiba plans to pursue those opportunities within a web of oem arrangements. One of them is with ITT, which granted Toshiba exclusive local marketing rights for its DPS1500 packet switching systems.

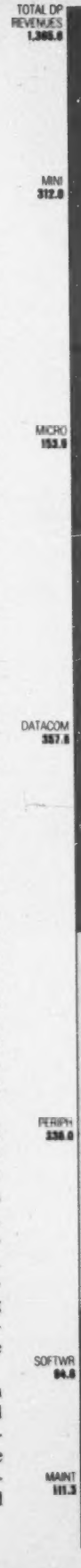
On the hardware side, Toshiba linked up with Sun Microsystems in the States. In the first stage of the agreement, Toshiba will import 1,200 of Sun's engineering workstations that it will use internally for developing software, CAD systems, and networking technology. Toshiba, which will connect the workstations to its minicomputers and peripherals, is tailoring the terminals to the local market by adding a Japanese-based Unix operating system.

Toshiba strengthened its micro line when it took a majority stake in the struggling micro maker, Sord Computer, which was folded into Toshiba's pc division. The deal may help Toshiba move up into the more lucrative 16-bit business computer market now dominated in Japan by NEC, Fujitsu, and IBM.

For its peripherals group, Toshiba clinched an oem contract to supply IBM with one million 3½-inch floppy disk drives for the PC AT. The company also won a slew of oem contracts for hard-disk drives and for its dot matrix and nonimpact color printers. Its Tokyo Electric subsidiary is one of Japan's leading manufacturers of low-end dot matrix printers. Sales of optical disk files nearly doubled due to orders from Japanese government agencies replacing their mag disk media last year. Facsimile sales increased about 20% in 1985, more than 80% of those revenues coming from the home market.

Last year the company, which has less than 8% of the local minicomputer market, introduced the Tosbac G8050 32-bit supermini to bolster its industrial process control business. In the Japanese small business computer market, Toshiba offers a series of minis that are being sold by its restructured office automation marketing group.

Revenue figures are in millions of dollars. Each increment represents $100 million.



22

N.V. PHILIPS GLOEILAMPENFABRIEKEN

5621 BA Eindhoven
The Netherlands
(31-40) 783496

Last year was one of strategic importance for 95-year-old Philips. On June 1, 1985, the electronics giant officially merged its dp and business communications interests into a new group, the Telecommunications & Data Systems Division. The division provided the bulk of Philips' $1.36 billion (G4.5 billion) worldwide dp revenues, up 13% in local currency.

What happens quickly on paper can take a long time in practice, especially in a company with strong corporate traditions. "I would like to have the integration of the two divisions complete by the end of 1986," said Telecommunications & Data Systems Division chief Gert Bindels, "but that doesn't mean it will all work." What is working is the corporate cause that unites the two groups—Sophomation. Announced in 1983, this strategic product line is based upon wide area and local area networks, a digital PBX, software, processors, and terminals. Last year Sophomation products brought in 20% of the company's dp revenues.

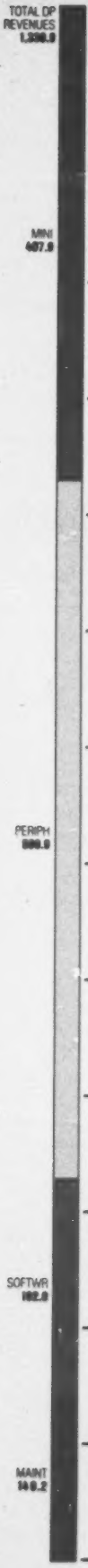
Sophomation is significant for Philips' customers because it provides a way to combine the company's disparate, and often incompatible, product lines. As Hilde Uhler, a consultant in the West German office of market researcher Dataquest, points out, "Philips has an incredible amount of work to do on its old product lines. Sophomation looks as if it is all tied together, but there are still a lot of loose ends." Even so, Philips has already tied a couple of marketing knots for Sophomation. Harris Corp. in the U.S. and Kyocera Corp. in Japan have both incorporated the Sophonet wide area network into their product lines.

In the States, Philips is looking for purchases rather than partnerships to bolster its slumping American operations. "U.S. business was lousy in 1985," admits Bindels. "We have little more than a wp operation there right now." Philips' U.S. subsidiary went through a shake-up last year when manufacturing was moved to a new plant in Montreal, the work force was cut by 150 people, sales offices were closed, and a new U.S. chief, ex-Burroughs U.K. manager Laurie Rushton, was appointed.

Philips also has pressing problems closer to home. Its microcomputer sales are poor and its minicomputer wares need updating. A member of the X/Open Group of European Unix supporters, Philips has not been as strong an advocate of the operating system as users had expected.

On the plus side, Philips has launched a number of innovative projects that could boost its dp operation. A pioneer in optical storage technology, the Dutch company is finally beginning to turn its ideas into revenues through a joint venture company with Control Data. It also has development deals with Digital Equipment for imaging systems, with West Germany's Siemens for production of a 1MB chip, and with France's Bull for smart cards, which are plastic cards with embedded microprocessors.

Revenue figures are in millions of dollars. Each increment represents $100 million.



23

NIXDORF COMPUTER AG

Furstenallee 7
4790 Paderborn, West Germany
(49-5251) 3000

Heinz Nixdorf, the founder and chairman of Nixdorf Computer, died suddenly at the Hannover Fair in March this year; his legacy is a company that is in fine shape for the future. In 1985, Nixdorf revenues grew by 20% in local currency to DM3.2 billion, by 16.7% in dollars to $1.34 billion. Nixdorf Computer has become one of Europe's few truly international dp firms: export revenues were up by 20% to $677 million, just over 50% of total sales.

Back home in West Germany, business was also strong, with sales up 21%, confirming Nixdorf's position as the country's third largest dp supplier, behind IBM and Siemens. Customers have responded particularly well to the company's new telecommunications product strategy, introduced in the early '80s; a 1985 high point was the thousandth installation of its digital PBX, the 8818. Sales of the company's digital telephone handset also improved last year.

Even so, traditional dp still remains the most important business for Nixdorf, and the company continued to expand and update its dp product range in 1985. Targeting the technical and scientific market, Nixdorf unveiled the Targon/32 mini, originally developed by Auragen Systems, and the new RISC-based Targon/35 supermini, built by Pyramid Technology, in which Nixdorf has an equity stake. These systems are aimed primarily at CAD/CAM applications running under Unix, and Nixdorf is working with other U.S. and European vendors in the European X/Open Unix group to further commercialize the operating system.

Meanwhile, Nixdorf took another step toward IBM compatibility last year with its upgrades for the flagship 8890 series of small mainframes. The new models have a capacity of between 1.3MIPS and 2.8MIPS and are based on Hitachi machines from that company's West German marketing agent, BASF.

Nixdorf also added new peripherals and software including TWAICE, an expert systems shell that the company developed in-house and uses for fault diagnosis. AI was one focus of the company's research last year, along with integrated workstations, new telecom products, and vertical market software for the finance, automobile, and engineering sectors.

Investment and staffing levels rose in all areas. R&D funding was increased by 18% to cover new projects. Capital expenditure went up by 12% and the number of employees rose by a substantial 3,100, giving the company a total work force of 23,280.

Nixdorf had put part of its equity on the open market for the first time in 1984. More of the company's equity is likely to be sold off this year to fund expansion and product development, a task that now falls to Nixdorf's new chief executive, Klaus Luft. Groomed by Heinz Nixdorf as his successor, Luft has been with the company for many years. He's an amiable and shrewd marketing man, and though Nixdorf will be a tough act to follow, last year's strong performance gets Luft off to a good start.

Revenue figures are in millions of dollars. Each increment represents $100 million.

24

STC PLC

10 Maltravers St.
London WC2R 3HA, England
(44-1) 836-8055

STC's decision to buy ICL two years ago may have been the best move the British company ever made. ICL, which recovered from its own financial crisis several years ago, was the only STC subsidiary that showed a profit in 1985. More than 50% of STC's revenues of $2.5 billion (£1.9 billion) were contributed by ICL. Dp revenues were $1.3 billion (£1.03 billion), a hefty sum but not substantial enough to put STC in the black: corporate losses were $69 million (£53.8 million) for the year.

STC's financial woes put pressure upon the company's charismatic chairman and chief executive Sir Kenneth Corfield to resign. Corfield, who had been the main architect of the ICL takeover plan, was replaced by Lord Keith of Castleacre. Robb Wilmot, the former managing director of ICL, also left. Wilmot, who had played a major role in rescuing ICL, severed all connections with STC at Christmastime to concentrate on his new chip company, European Silicon Structures.

Wilmot and Corfield were not the only people to go. STC trimmed its staff by 3,000 and moved into a smaller head office. In other cost-cutting moves, the company sold off various subsidiaries that were deemed marginal to its core businesses. One sell-off was IAL Gemini, a joint venture with Cap Gemini Sogeti. The blues got so bad for STC that there was even talk of a takeover bid from British Telecom (BT), a major customer for STC's optical fibers and other telephone transmission equipment.

The newcomers at the top of STC are pinning their hopes for recovery on information systems. STC Network Systems, a joint company with ICL, has already been set up and the firm is forming another joint venture to tackle defense markets.

The news from the U.S. was bleak: ICL closed manufacturing operations, laying off 300 workers at its Utica, N.Y., plant. There was better news in Britain, where ICL won a $9.6 million contract to supply BT with its One-Per-Desk voice/data workstation. Telecom Australia also ordered $5.4 million worth of the workstations.

The pivotal products of 1985, however, were the Series 39 mainframes, built with the help of Fujitsu of Japan. Announced in April, there were $150 million worth of orders within six months. At the low end, ICL introduced Quattro, a multi-user micro that runs Concurrent CP/M, and Clan, a Unix-based microcomputer, in its home market.

A Unix supporter, ICL joined the X/Open Group, a consortium of European dp companies that plans to develop a common application software environment based on the AT&T operating system. The firm is also participating in the British government's Alvey R&D project. Such collaborations are fine to a point, say British observers, who believe that for ICL, cooperation should begin at home—with STC. The twosome have yet to prove they can combine their computer and communications capabilities to come up with competitive products.

Revenue figures are in millions of dollars. Each increment represents $100 million.

25

NORTHERN TELECOM LTD.

33 City Center Dr.
Mississauga, ONT L5B 3A2
(416) 275-0960

The Canadian telecommunications equipment giant continued to grow nicely in 1985: corporate revenues were up 24%, to $4.25 billion from $3.42 billion in U.S. dollars. Net profits increased by 11%, to $275 million from $247.7 million. Northern Telecom said price reductions to meet increased competition—AT&T is finally selling an all-digital central office switch—and the cost of introducing new products and features have held down profit growth.

NT reported record revenues in all its geographic markets, with the U.S. once again representing the largest part of its growth in 1985. U.S. revenues rose 40% to $2.9 billion, or 69.7% of total revenues. (Reflecting this market reality, beginning in 1986, Northern Telecom will issue financial reports in U.S. dollars.) Revenues generated outside North America remained at 4% of total revenues and, at $175.9 million, were up 38% from 1984.

Northern continued to push OA products even though its 1985 performance in the office did not match its success in telecommunications. Dp revenues for the integrated business systems and terminals product line were $1.24 billion, up 14% from $1.17 billion a year earlier. The Meridian DV-1 Data Voice System, introduced late in the year, had nonetheless sold several hundred units by year-end.

The company continued to be a market leader in PBXs in 1985, shipping 1.4 million lines of Meridian SL-1 and Meridian SL-100 during the year, a 27% increase over the previous year's 1.1 million lines.

Much of Northern Telecom's success has come from its fully digital central office switches. Worldwide, no other vendor has installed as many, and central office switches continued to be the most important of the corporation's products in 1985, with revenues increasing 55% from 1984 to $2.1 billion U.S. dollars, or 50% of total revenue. The firm captured a lucrative and widely publicized export contract with Nippon Telegraph and Telephone Corp. (NTT) of Japan to supply central office switching equipment in the world's second largest market for telecommunications equipment.

NT has supplied telecommunications equipment to all 22 of the Bell Operating Companies (BOCs), and, in 1985, signed agreements valued at nearly $1 billion with BellSouth, NYNEX, Southwestern Bell, and Pacific Northwest Bell.

In response to slowing growth in the telecommunications market, NT continued to invest heavily in R&D, with expenditures up 36% to $427.9 million. It completed a new $25 million headquarters building in Nashville and built two new plants, one near North Carolina's Research Triangle and one in Santa Clara.

Edmund B. Fitzgerald was named chairman in 1985, succeeding Walter F. Light, who resigned after a decade as president, ceo, and chairman. David G. Vice was named president. He will also serve on the board, as will Bowie K. Kuhn, the former baseball commissioner.

Revenue figures are in millions of dollars. Each increment represents $100 million.

26

TELEFONAKTIEBOLAGET LM ERICSSON

S-126 25
Stockholm, Sweden
(46-8) 752-0000

Ericsson showed a 45% drop in pretax profits to $114 million, despite dp revenues having increased by 10% to $1.23 billion (Skr10.6 billion). Management put most of the blame on the unsuccessful U.S. introduction of communications and computer products. LM Ericsson, one of the world's four largest telecommuncations equipment companies, had thought that good technology, a deal with Atlantic Richfield (Arco), and some imported Swedish managers would do the trick in the U.S. Today, they know better.

The two most visible signs of the changing times are American managers in almost all top spots in the U.S. and the end of formal cooperation with Arco. Swedes Hakan Ledin, former president of Ericsson Inc., and Gundor Rensch, former head of Ericsson Information Systems (EIS-USA), were replaced by American executives. Headquarters were moved from international New York to heartland Dallas. The emphasis in the U.S. is now limited to two products: the MD-110 PBX and the public exchange AXE, neither of which has significantly cracked the market.

In the computer marketplace Ericsson has changed strategy and become a company with a European focus. After severe losses in both 1984 and 1985, this was a necessity. After losing $23 million in 1984, and $119 million last year, EIS president Stig Larsson ordered major cutbacks to reduce costs—and worldwide marketing costs barrels of money.

Larsson is the third president of EIS in three years. He was put on the hot seat in the beginning of 1985, when things looked very poor, and at that point he started by stabilizing the products. In an effort to make money fast, EIS had delivered merchandise without testing it adequately. Three hundred of the MD 110 PBXs were already installed when a major walkthrough uncovered some 3,000 software errors. The same thing, on a smaller scale, happened with the new banking terminal generation. It took EIS the best part of 1985 to get rid of these problems.

Larsson seems able to cope. He claims 1986 will be a breakeven year, and figures the firm will be in the black again in 1987. Save some major disaster, he is probably right. But EIS is changing in the process from a supplier of systems to a manufacturer of boxes, albeit boxes of high ergonomic quality.

EIS is now organized into three independent divisions: one for communications systems, in other words the MD 110; another for computer equipment, selling the pcs and Alfaskop banking terminals; and a third for office equipment—mostly with the Facit label—typewriters, furniture, and peripherals. Each division has complete responsibilty for its products, from production to marketing to installation and service. This is an important change for Ericsson, which is used to a matrix organization, common factories, and decision-making by staffs.

At last, EIS seems to have the strong management the company has lacked since it began in 1981.

Revenue figures are in millions of dollars. Each increment represents $100 million.

27

TANDY CORP.

1800 One Tandy Center
Fort Worth, TX 76102
(817) 390-3700

Tandy Corp.'s revenues staged a remarkable recovery late in 1985, but the big electronics retailer's income ran behind the previous year's performance. Still, the company was predicting a sales growth rate of 15% a year for the next several years. And its chairman, John V. Roach, predicted a 30% increase in income for the fiscal year that ends this month. (That would follow an earnings drop of about the same rate in the last fiscal year.)

Tandy, which operates 5,000 retail electronics stores, recorded 1985 revenues of $3.13 billion, an increase of $331 million over 1984. Its income of $203.9 million dropped 12.8% from 1984's $234 million. The company began to gain momentum in the second half of 1985, and chalked up its first billion-dollar quarter at the end of the year. Dp revenues for the year were up a solid 28.7%, hitting $1.2 billion despite sharp price-cutting throughout the microcomputer business.

Much of the good news at Tandy was due to its Model 1000 computer, compatible with IBM's PC but substantially cheaper at the time of its introduction last year. Some reports said Tandy was selling from 7,000 to 10,000 Model 1000s a month, and by early fall, Roach was predicting the Model 1000 would be the "most popular PC-compatible computer in the marketplace." Early deliveries of the Model 3000, which is compatible with IBM's advanced technology (AT) models, were also cheering, the company reported. The Model 3000, introduced in November, is priced between $2,600 and $3,600 depending on the amount of disk memory—or about $3,000 below what IBM was charging for its machines. Tandy promoted the Model 3000 as working faster and more easily expandable than the AT. The Model 3000 is the final transition of the company's previously incompatible 16-bit machines to IBM compatibility, a transition that the company thinks will make it a viable long-term participant in microcomputers. Although sales at its 431 computer stores have been increasing since late last summer, Tandy still says it foresees "many uncertainties" in the microcomputer business this year.

Tandy, which is the number one company in the $34 billion retail electronics market, operates many manufacturing operations overseas—in Japan, Korea, and Taiwan—and last spring signed agreements to open personal computer manufacturing plants in Mexico. Sales overseas account for about 7% of Tandy's gross, with computers supplying 40% of foreign revenues. While sales measured in local European currencies increased, the strength of the dollar caused losses in the European market.

The company this year began a remodeling of its Radio Shack stores, introducing brighter color schemes and sleeker displays in an effort to present "the technology store" image, according to Roach. More than 500 stores will get the make-over treatment in 1986, and all the Radio Shack stores are scheduled to be remodeled within five years.

Revenue figures are in millions of dollars. Each increment represents $100 million.

28

DATA GENERAL CORP.

4400 Computer Dr.
Westboro, MA 01580
(617) 366-8911

The year 1985 was a roller-coaster one for Data General: it began joyously at the heights but quickly plunged to the depths. The company began its fiscal year, the final quarter of calendar '84, with a near 40% leap in sales, but then a totally unexpected slump in demand for the minimaker's products led to a year-long sequential decline in sales and profits in calendar '85. Total revenue for the year shrank 4.3% to $1.2 billion, and because the company's resources and expectations were geared for a repeat of its stellar performance in 1984, DG's net profit dived 70.8% to $24.3 million. After the March quarter, the company spent the remainder of the year scaling down its costs, attempting to balance them with real demand. The most severe of its corrective measures was its first companywide firings in June: worldwide employment was cut by 6.5%.

Data General, more than any other minicomputer company, was a victim of last year's sickly domestic economy. The company's above average dependence on industrial oems and its relative lack of new products left it peculiarly vulnerable to environmental forces. Even overseas, where the overall economy remained stronger, the company's poor product cycle led to growth levels well below that of its major competitors. DG's fiscal growth in international markets was 16%, almost 10% less than Digital and 24% below Prime.

Unlike DEC and Prime, which began to ship new high-end processors in the March quarter, Data General's "biggest announcement to date" did not come until the year's end—too late to boost earnings, but a "seed" for future growth. It was apparent that, with its 5.5MIPS and 10MIPS general purpose superminis, the new MV 20000 Models 1 and 2, priced at $34,000/MIPS and $42,000/MIPS respectively (i.e., almost half the cost of comparable VAX 8600s from DEC), the company is hoping to power its way out of its difficulties by offering products and pricing its customers simply can't refuse. Even at the lower end, a new departmental MV 2000 and engineering workstation were described as having price/performance characteristics "unrivaled in the industry."

DG's transition from blue-collar to white-collar marketing, spearheaded by the success of its CEO office automation software, has left many of its traditional technical and engineering customers out in the cold and hurt sales. As a result DG is pinning its hopes on new software that bridges "white" and "blue" camps, creating greater corporatewide integration. Its first offering, known as TEO (Technical Electronic Office), weds CEO's functions to factory, engineering, and laboratory computers and allows technical workers to integrate all aspects of their work.

Data General's president Edson de Castro admits to two blunders: underestimating demand in 1984 and overestimating demand last year. Maybe, with a bagful of new products and a kinder economic environment, the company will get it right in 1986.

Revenue figures are in millions of dollars. Each increment represents $100 million.

29

GENERAL ELECTRIC CO.

3135 Easton Turnpike
Fairfield, CT 06431
(203) 852-8200

History buffs will no doubt recall that once, before they sold out to Univac and Honeywell, both RCA and GE were in the computer business. Now they are the same company. The merger was approved by RCA stockholders in February 1986.

And although GE recorded only a 1% increase in sales—to $28.28 billion in 1985 from $27.95 billion in 1984—enthusiasm about the merger helped maintain GE's good rep on Wall Street. Net income rose a very modest 2%, to $2.33 billion from $2.28 billion.

The company's dp operations shone brighter, with revenues reaching $1.13 billion, 19.5% over 1984. Amid the turmoil of restructuring and refocusing, General Electric Information Services Co. (GEISCO) had revenues of $950 million, 15% over 1984.

The operator of the world's largest commercially available teleprocessing network was busy on both the hardware and software fronts. The two-pronged attack was part of GEISCO's refocusing its business direction to offer specific business network applications delivered through its network to targeted markets. The company signed an agreement that establishes NEC as a distributor of GEISCO's teleprocessing services in Japan.

At its computer supercenters in Cleveland and Amstelveen, the Netherlands, the company replaced 35 Honeywell DPS 870 mainframes with 11 top-of-the-line DPS 90s, built by NEC in Japan. This was part of a $66 million equipment upgrading and modernization program.

New software offerings for IBM mainframe users included 3270 SNA/SDLC access to GEISCO's Mark 3000 IBM-based service and to its Mark*Net Value Added Network Service. It also announced support of IBM's VM/CMS system as part of its MARK 3000 service and 3270 bisynchronous service through Mark*Net.

GEISCO introduced the EDI*Express system, designed to provide the electronic exchange of business documents among trading partners. The company extended EDI to the health care industry by forming the EMC*Express, which electronically collects and distributes medical claims.

One pleasant surprise was the success of GEnie, GEISCO's network for personal computer users. Created to exploit empty nonprime-time hours on GEISCO's network, GEnie has come out of the bottle with a vengeance.

Refocusing was not without its price. A reduction in force in May idled 400 workers.

"Those reductions were due to realigning costs to maintain our profitability," said spokesperson Ruann Pengov. "We made the last step in the transition we've been going through in the last two or three years. Even though we have a tremendous network, we're focusing on applications that will bring value added. We've gone from technology driven to market driven."

Revenue figures are in millions of dollars. Each increment represents $100 million.

30

MCDONNELL DOUGLAS CORP.

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

McDonnell Douglas Corp.'s sales went up 18.7% in 1985, from 1984's $9.66 billion to $11.48 billion; corporate earnings didn't match the pace, rising only 6%, to $345.7 million from $325.3 million.

The aircraft giant's Information Systems Group had a lot to do with this disparity. ISG had revenues for the year of $1.10 billion—up 12.3% over 1984—but managed to lose $109.3 million; in 1984 ISG had lost $48.7 million. So far, the chances of ISG hitting its goal of $4 billion in revenues and $400 million in profits by 1990 don't look great. But not all the news was bad: McDonnell Douglas Manufacturing and Engineering Systems had revenue growth of more than 40% in CAD/CAM business and McDonnell Douglas Network Systems achieved growth of almost 30% in its Tymnet data communications network business.

The general slowdown in the computer services business hit while ISG was in the midst of a reorganization, combining and rearranging elements of what formerly were McAuto, Microdata, and Tymshare. In the process, it dropped two activities: McDonnell Douglas Distribution Systems Co. was folded and Unitax was sold.

Currently ISG includes McDonnell Douglas Health Systems Co., McDonnell Douglas Manufacturing and Engineering Systems Co., McDonnell Douglas Network Systems Co., McDonnell Douglas Payment Systems Co., McDonnell Douglas Computer Systems Co., McDonnell Douglas Diversified Information Systems Co., McDonnell Douglas Field Service Co., McDonnell Douglas Information Systems International, and McAuto Systems Group Inc. These nine companies comprise 21 separate operating units.

In the third quarter, the company said it was taking measures to cut costs and increase revenues; as a result, a small profit was announced in December, but this was before amortization of $65.1 million in acquisition costs. ISG also acted, late in the year, to curtail new product development, particularly in the financial services area.

One area where ISG still has plans for growth in '86 is the Diversified Information Systems Co. The company offers services to a number of vertical industries in which operations to date are limited. ISG, however, hopes several of the industries may someday prove lucrative enough to warrant full company status for the units serving them.

Nevertheless, the rhetoric issuing from ISG headquarters wasn't about growth, it was about hanging on in tougher times: "The group is limiting its expansion into some markets and cutting back or eliminating some product lines, and central staff costs have been significantly reduced. Some staff functions are being decentralized to give individual businesses more direct control over costs. Such actions, combined with the fact that ISG has entered the year with a stable organizational structure, should position the group for improved results in 1986."

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 1,102.1

31

AUTOMATIC DATA PROCESSING INC.

One ADP Blvd.
Roseland, NJ 07068
(201) 994-5000

Last year, posting its 36th consecutive year of rising revenues and earnings, ADP passed the $1 billion mark, the only computer services company to reach that milestone.

ADP's main business hasn't changed much over the years. Employer Services, the payroll and tax filing unit, one of seven divisions and ADP's oldest and largest business, grew to represent about 45% of the company's revenues, up from about 40% in 1984. Revenues themselves hit $1.10 billion, up 14.8% from 1984's $959.4 million; and net income was up 20% to $95.3 million from $79.4 million in 1984.

Major initiatives in Employer Services in 1985 included the formation of a National Accounts Division to target companies with over 500 employees and an interactive personnel and payroll service.

Brokerage Services is ADP's second largest business, representing about 20% of the company overall. Last year, ADP announced it was acquiring Allied Signal's Bunker Ramo Information Systems business, a transaction completed in February at a net cost of about $40 million. The BR purchase follows the acquisition of GTE Telenet's brokerage service business in 1983. The purchases signal ADP's move into the front offices of brokerage houses after more than 20 years of being a force in back offices. In June, ADP acquired CDC's Brokerage Transaction Services Division, which provides back office transaction processing and record keeping. The Accounting and Dealer Services Divisions each account for about 10% of ADP's business. The remote processing mode of delivering the accounting service slowly declined, but the newer interactive delivery mode picked up, particularly in client-site computer placements. ADP introduced the PC Connection, which enables an ADP client using an IBM or compatible micro to interface to ADP minicomputers. Last year, ADP acquired ROI, Minneapolis, which sells an integrated manufacturing accounting system. Dealer Services had strong growth due to an improved automotive market and new product introductions.

SRVICES 1,102.1

Each of ADP's other divisions—Collision Estimating Services, Network Services, and Banking Services—accounts for 5% or less of ADP's overall business. Within Collision Services, which had very strong growth, ADP is working on Atlas, a system designed to enable insurance adjusters to cite a few key aspects of a damaged vehicle in order to make a decision on whether to repair or replace it. ADP hopes to have the service available this year. In May, ADP acquired Automotive Information Systems, which provides used car valuation services. Network Services revenue declined but remains profitable. The ATM service in the banking division is in the black but growing less rapidly than ADP thought it would. Accordingly, the company has scaled back its sales efforts to small sites and medium-sized institutions.

In the financial area, ADP raised $100 million in a debenture offering.

Revenue figures are in millions of dollars. Each increment represents $100 million

TOTAL DP REVENUES 978.3

32

GENERAL MOTORS CORP.

3044 General Motors Blvd.
Dearborn, MI 48202
(313) 556-5000

In 1984 GM swallowed Electronic Data Systems (EDS) for a mere $2.5 billion. In 1985 it gulped down Hughes Aircraft Co., the electronics and components wizard, lust for which engendered some hot bidding before GM edged out Ford and Boeing. Hughes cost twice as much as EDS, but what's $5 billion when your sales are $96.4 billion, the highest in the company's history, and your net income of $4 billion is the second highest in your history? Hughes instantly made GM the number one defense electronics concern in the U.S.

Hughes, like EDS, will retain its separate identity under the umbrella—along with Delco Electronics Corp.—of GM Hughes Electronics Corp. Based on its 1985 sales, GMHE ranks among the top 40 U.S. industrial companies.

While Hughes got all the ink, EDS got all the money. Even leaving aside the huge $2.36 billion billed to internal GM business, EDS's revenues increased 24%, from $786.1 million to $978.3 million. (Dp revenues in the DATAMATION 100 do not include revenues stemming from sales by one unit of a company to another.) EDS's net income soared 135%, from $80.7 million to $189.8 million, although after an accounting change net income was reduced by $49.8 million.

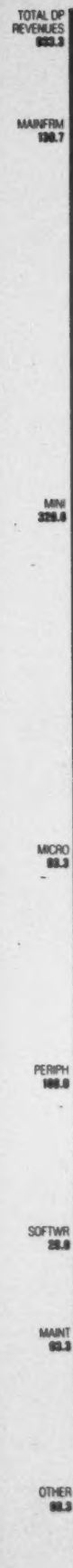
SRVICES 978.3

Internationally, EDS's non-GM business more than doubled, the biggest new piece being a facilities management contract with Unilever. Under the contract, considered to be the largest of its kind in Europe, EDS will assume responsibility for the data processing and communications services required by the joint head offices of Unilever PLC in London and Unilever Netherland BV in Rotterdam. EDS was also awarded a five-year systems integration contract by the Flemish Ministry of Education of the Belgian government. EDS bought Swedish software company Datema and tried unsuccessfully to take over British software house Logica PLC.

In the U.S., EDS landed several large federal and state government contracts, including a 10-year, $200 million office automation agreement with the U.S. Department of Agriculture and a seven-year, $45 million integrated office automation contract with the U.S. Customs Service. In the private sector, EDS signed a 10-year, $260 million facilities management agreement with Western Union and a contract to provide corporatewide support of AT&T information processing and marketing activities.

There were some bumps on the road to MAP (manufacturing automation protocol), notably technical difficulties at the Autofact demonstration, where 21 companies talked to each other on 802.4 and 802.3 networks. But heretofore reluctant vendors replaced words with action, and several new products were announced at each of the four MAP user group meetings. Office compatibility was also looking more promising, as MAP's office counterpart, the technical/office protocol (TOP), got off to a good start when Boeing signed on.

Revenue figures are in millions of dollars. Each increment represents $100 million



33

MITSUBISHI ELECTRIC CORP.

2-2-3 Marunouchi
Chiyoda-ku, Tokyo 100, Japan
(81-3) 218-2171

Heavy reliance on oem agreements has nearly always made Mitsubishi Electric (MELCO) a low-profile player in the computer arena. Only when there's been trouble with foreign firms like IBM or Tandon has the company felt the warmth of the public spotlight. Nevertheless, the company's estimated 1985 dp revenues of $933.3 million (¥222 billion) are hardly obscure. Net corporate income still plummeted an estimated 10.4%, underscoring the need for further diversification of the company's dp offerings.

Oeming microcomputers has given MELCO management a few headaches over the last two years. One migraine hit at the end of '84, when one of its micro customers, Leading Edge Products Inc. in Canton, Mass., slapped the company with a breach of contract suit. MELCO immediately countersued Leading Edge in a Los Angeles court over delinquent payments. So, when Leading Edge switched to Korean supplier Daewoo, few tears were shed at MELCO.

A bigger disappointment came when the MSX pc standard fizzled last year, leaving MELCO and other Japanese manufacturers looking for other ways to get their production lines humming. News was mostly good on the micro front, however: sales to Sperry continued to hold steady and total micro revenues were up about 85%.

Sperry's pc and point-of-sale (POS) terminal orders helped Mitsubishi Electric compensate for the decline in disk drive exports. The global market for disk drives slowed down in 1985. Stepped-up competition from Singapore, Taiwan, and Korea didn't help Mitsubishi either, but all was not bleak. At the end of last year, the International Trade Commission upheld a decision rejecting a floppy disk drive patent infringement suit filed by Tandon of Chatsworth, Calif. (Sony and Teac were also ruled not to have pirated Tandon's technology in this decision.)

MELCO also made the most of its minicomputer muscle last year. Big in factory automation applications, the company currently has a 7% share of the Japanese mini market. Mitsubishi has also zeroed in on factory automation for its digital and optical communications wares. The company is hoping it can be a more active player on the communications scene. Taking a step in that direction last year, it announced it would be selling Rolm's digital PBXs in Japan. It also signed a three-year, $3 million contract to market Aregon International's videotex software in Japan. British company Aregon will tailor its IV-5 videotex software to the Japanese language.

In 1985 Mitsubishi Electric profited from its participation in the Japanese government's fifth generation computer project, officially known as the Institute for New Generation Computer Technology (ICOT). MELCO landed a contract for producing a commercial version of ICOT's sequential inference machine. It also improved its programming expertise last year under another government project, Sigma, which is working on software development tools based on a Japanese language version of Unix.

Revenue figures are in millions of dollars. Each increment represents $100 million.

34

OKI ELECTRIC INDUSTRY CO. LTD.

1-7-12 Toranomon
Tokyo 105, Japan
(81-3) 580-8950

Things were not okay at Oki Electric last year. After an encouraging sales surge the previous year, DATAMATION estimates that, at $1.68 billion (¥400 billion), Oki had zero revenue growth in calendar 1985, with profits plummeting 50%. Probably the only reason Oki turned a profit is because it sold off Kinseki Ltd., a subsidiary that makes crystal oscillators.

Because of dependence on commodity production, Oki has a particularly painful time when there is a prolonged downturn in markets for dp equipment and semiconductors. While other firms have successfully moved upmarket into more software-intensive products, Oki has continued to rely on highly automated factories and economies of scale to churn out dp peripherals with low margins. The lull in semiconductor markets helped increase Oki's dp dependence. Revenues from dp—$890 million (¥211 billion)—accounted for an estimated 53% of sales. As the year progressed, the rising yen took an additional toll on Oki, since North America is its largest overseas market.

At a time when investing in offshore production has increased in importance, Oki is strapped for cash and unable to make the move. Other Japanese competitors like NEC have 20% of production offshore compared with less than 3% for Oki. The cash pinch cut into R&D spending, and Oki's R&D budget was flat in calendar 1985.

Printer sales deterioriated as the microcomputer market leveled off in the U.S., while floppy disk drive sales fizzled and margins disappeared. Even Oki's substantial investment in factory automation was unable prop up profits.

Much of Oki's peripheral production is done by programmable robots developed and manufactured in-house. Oki has designed its IF 800 line of microcomputers especially for use in multiple configurations for hierarchical control of assembly lines. For internal use as well as outside sales, Oki has developed its own robot software language that makes it easier to produce software in modules for different parts of the system.

Oki's founder, Kitaro Oki, was the first person to manufacture telephone sets in Japan. Dependence on data communications equipment as the mainstay of its product line has continued. Oki is one of the favored group of suppliers to Nippon Telegraph and Telephone (NTT), and an Oki D70 digital switching system is used by NTT in several pilot projects for ISDN applications and marketing research. Sales have increased in Japan for small- and medium-scale digital PBXs.

In overseas markets, Oki's early success at selling facsimile machines to mainland China diminished last year. An agreement with the Chinese government to produce fax machines proved less profitable than had been hoped. The cellular phone market in America, supplied in part by an Oki manufacturing facility in Atlanta, was also a disappointment.

Revenue figures are in millions of dollars. Each increment represents $100 million.

35

AMDAHL CORP.

1250 E. Arques Ave.
Sunnyvale, CA 94086
(408) 746-8510

The year 1985 has already taken on folklore status as one of the most difficult ever for the computer industry, but Amdahl Corp., the leading American pcm, came through with fairly respectable numbers.

Revenues for the year were $862 million compared with $779.4 million in 1984, but net income slipped to $28.7 million from $36.4 million the previous year. Margin pressure, a tough pricing climate, and the strong U.S. dollar's impact on overseas business, which accounts for about 30% of the company's total sales, were cited by Amdahl as reasons for the erosion in profit.

Nevertheless, Amdahl maintained its 11% share of the large systems market. It shipped more cpus, storage products, and communications products than it did in 1984; and it brought its employment level up to about 7,000, from 6,600 the previous year.

During the year, Amdahl shipped about 200 new 580 processors—somewhat better than 1984's results— reprcsenting $434 million in revenues. In addition, Amdahl, which entered the supercomputer market late in 1984, sold four vector processors in 1985 as a result, booking about $12 million in revenue. Two of the machines were shipped during 1985, while the other two were scheduled to be installed during the first quarter of 1986.

In the storage products area, Amdahl shipped more than 4,000 of its 6280 and 6380 disk drives. These sales accounted for 23% of all hardware-based revenues and 18% of total revenues. The double-capacity AE4 and BE4 6380 drives, announced on Dec. 3, are expected to begin shipping in the fourth quarter of this year.

An oem agreement signed in 1985 under which AT&T was to use the Amdahl 4400 family of X.25 switches in its Net 1000 product and for other applications, did not pan out as expected. In January, AT&T announced that it was shutting down Net 1000 in June of 1986. As a result, Amdahl says, its switch business "is not at expected levels."

The software products business, however, picked up for Amdahl, at least on one front. By the end of 1985, the company's mainframe Unix entry, UTS, had garnered more than 150 licenses in total. In addition, Amdahl, which originally had UTS operating as a guest system under VM, last year brought out a native mode UTS.

On the downside, though, it was reported that the company's Aspen project to develop an operating system to coexist with IBM's MVS had not succeeded as hoped.

Last May, Amdahl hired Joseph Zemke, formerly with IBM and Auto Trol Technology, as chief operating officer, a new post. At that time, due to what the company said reflected Amdahl's increased size and maturation, an office of the president was formed consisting of Zemke and John C. Lewis, president and chief executive. Gene White remains as chairman.

Revenue figures are in millions of dollars. Each increment represents $100 million.

36

HARRIS CORP.

1025 W. NASA Blvd.
Melbourne, FL 32919
(305) 727-9100

This year, the positive notes of Harris's government systems and communications sectors were obscured by negative vibes from the semiconductor and information systems sectors. Net income was hit hard, plunging 33% to $60.7 million from $90.7 million. Revenues came off much better: they rose 5.4%, from $2.19 billion to $2.30 billion.

Perhaps the crowning blow came in January when Harris, considered an attractive stock throughout its times of trouble, suffered a cut in Moody's Investors Service rating of its long-term debt from single A-2 to single A-3. Moody's said a weak market, particularly in semiconductors, and stiffer competition would restrict Harris's ability to generate higher earnings over the intermediate term. Harris naturally told the service where to go, saying the slowdown in certain key markets had ended and it was ready to roll.

The company had plenty of new products to help it along. The apex was reached in June, when the computer systems division introduced its 7MIPS HCX-7 series of 32-bit superminis and the 5MIPS Harris 1200 supermini. Harris claims the Unix-based HCX-7 systems are the highest-performance Unix computer systems available and the first supermini to offer price/performance at less than $40,000 per MIPS. It was part of Harris's grand design to "gain significantly higher market share in superminicomputers," as vice president and general manager James Oyler said.

More than 100 new semiconductor products hit the streets during the year, including a large-scale CMOS standard-cell library based on the 8086 microprocessor family of peripherals and a gallium arsenide cell-array family.

Harris was eyeing the office automation and dp markets as well. The company introduced the Harris 9300 work group system, the Lanier Concept III series of office automation systems, and the Harris 20-20 PBX/integrated network switch. A further indication of its commitment came when Harris acquired the domestic direct sales, service, and support operations of Exxon Office Systems Co.

The firm merged its biggest success, the Lanier Business Products sector, with the information systems sector. The two are expected to strengthen considerably Harris's presence in the worldwide information management systems market.

Harris announced in December that AT&T had chosen it for a joint partnership to develop a Ku-Band satellite business communications service. The deal could bring Harris at least $150 million in equipment sales. And in January Harris and 3M Co. announced a joint venture for the worldwide marketing, sales, and service of copiers and facsimile machines.

"As a result of lower product costs, reduced expenses, and new product introductions, we expect to show an improvement in earnings," said chairman Joseph Boyd.

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 800.7

37

COMPUTER SCIENCES CORP.

2100 East Grand Ave.
El Segundo, CA 90245
(213) 615-0311

Things have been looking up at Computer Sciences Corp. and the prognosis is for more good news. In 1985, the computer services firm managed to bag a couple of those $100 million-plus contracts, boosting its revenues to $800.7 million from $709.6 million.

In August, the company announced the largest contract in its history, a $282 million award from the U.S. Customs Service for a secure Consolidated Data Network (CDN) to combine law enforcement and telecom functions and to serve 7,500 sites worldwide via 30,000 connections to data terminals.

In September came a $175.6 million award from the Environmental Protection Agency for support of ongoing operations and to assist in a multiyear modernization program to integrate mainframes, minicomputers, and micros with nationwide telecommunications links.

The period from April to October 1985 saw CSC booking a whopping $802 million in orders, compared with $215 million for the same '84 period, and $386 million, $225 million, and $180 million in the three preceding years. The company is considered a top contender in a number of large pending awards.

SRVICES 800.7

Net income for calendar 1985 was $22.3 million compared with 1984's $27.6 million, a figure that had included a nonrecurring gain of $8.7 million resulting from the sale of a subsidiary and some phased-down operations. (For its 1985 fiscal year, ended March 28, 1986, the company earned $27.7 million compared to $27.6 million for fiscal 1984.)

The company's Information Network Services Group, which lost money in 1984, was reorganized and profitable in 1985. Also reorganized was the corporate marketing organization, which managed to improve the company's contract win rate with a little help from its number one competitor, Electronic Data Systems. EDS is becoming more and more involved with a market captive to its new parent, General Motors.

CSC's international revenues were down in '85, due primarily to the winding down of a big contract with Saudi Arabia. The company is still a subcontractor—to the tune of $50 million—to Boeing Aerospace Co. on another Saudi contract and, in June of '85, won a $7.6 million, five-year contract from the U.K. Department of Inland Revenue.

Government at all levels continues to be CSC's biggest market, but an agreement with AT&T announced early this year could boost its commercial business. The agreement calls for CSC to provide a variety of support functions, including some market research, software design, and turnkey software development, in support of AT&T's office automation efforts.

Another portent of increased commercial business was the acquisition early this year of Comtec Inc., Framington Hills, Mass., an information systems supplier to health maintenance organizations. This operation is now part of the company's Industry Services Group.

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 769.7

38

PRIME COMPUTER INC.

Prime Park
Natick, MA 01760
(617) 655-8000

Prime weathered last year's demand slump better than any other mini maker by focusing on carefully selected, high-growth markets and by rapidly expanding its sales force. Prime may not have the dazzling product breadth of a DEC—or even a Data General—but it used what it had to maximum effect in 1985, boosting total sales by 20% to $769.7 million.

As larger rivals froze their hiring or fired people, Prime was in the unusual position of suffering a shortage of sales personnel. The company believes it could have done better still. How? Prime says it can supply world markets with a price/performance-competitive product family with an average age of seven months. "Now all we need are more people to sell it," says president Joe M. Henson, whose new goal is to reach $2 billion a year in sales by 1990.

MINI 563.7

While larger competitors have been building up their office automation efforts, Prime elected to target the CAD/CAM market. Rather than the volatile and competitive electrical CAD sector, the company focused on mechanical (and architectural) CAD, a market in which there are fewer startups and low-end workstations. The strategy paid off: Prime's CAD/CAM business grew at 33% and contributed 18% of total revenues during 1985.

The earnings of more vertically integrated companies were hurt by the IBM PC phenomenon, but with its minimal commitment to the low end, Prime skirted this problem, and profits on recurring operations actually grew 10% to $57.8 million. (Note that last year's $59.7 million net profit figure was artificially boosted by a nonrecurring gain.)

Prime's overseas business, especially in Europe, was exceptionally strong. Foreign sales were up about 15% and constituted 45% of Prime's overall revenue. In 1984, the company took the risky step of using Europe as the first location for what has since become an explosive buildup in its worldwide sales force. This proved to be an auspicious move, as the surge in European demand has more than offset the sluggish domestic demand picture. Europe now accounts for 31% of Prime's total revenues.

The company's strategy of minimizing risk at the low end was apparent in its 1985 product announcements. Two successful medium-sized members of Prime's 50 series, the 2550 and 9650, were superseded by more powerful TTL computers after only 18 months on the market. Yet Prime has still to replace its four-year-old, low-end 2250, despite declining sales. The 2550 was replaced by the 2655 office system, which Prime claims offers 50% more power for the same cost. The new 9655 supermini, 10% more powerful than the 9650 for the same price, was also announced in the fall. Prime's other major product announcement in 1985 was its line-topping 4MIPS ECL supermini, the 9955.

MAINT 206.0

During the year, Prime backed its contention that its stock is undervalued by buying back $6 millions' worth. The company ended the year virtually debt free and with nearly $68 million in the bank.

Revenue figures are in millions of dollars. Each increment represents $100 million.

39

NIPPON TELEGRAPH AND TELEPHONE CORP.

1-6 Uchisaiwai-cho 1-Chome
Chiyoda-ku, Tokyo 100, Japan
(81-3) 509-5035

Following the deregulation path paved by AT&T and British Telecom, Nippon Telegraph & Telephone (NTT) nominally cast off its PTT status in 1985. Although now officially a public corporation, the Japanese government still controls NTT's equity, up to two thirds of which will be sold off over the next 10 years. Japan's Telecommunications Enterprise Law, which went into effect on April 1, 1985, requires the Japanese government to hold at least one third of NTT's stock. That same law, attempting to inject competition into Japan's datacom market, also ended NTT's monopoly over common carrier services.

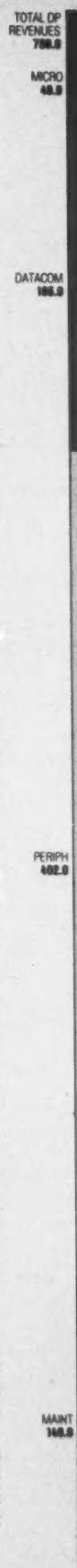
Those common carrier revenues are not included in NTT's 1985 dp total, which DATAMATION estimates to be $764.1 million (¥181.9 billion). Roughly 4% of NTT's earnings came from data communications and computer services. NTT plows a lot of its money back into R&D. In fiscal 1985, 3% of its operating revenue went to 3,800 researchers at its four Electrical Communication Laboratories. A fifth laboratory devoted to software production technologies was established in 1985. A major R&D focus has been on developing technology for the much ballyhooed Information Network System (INS), a nationwide multiservice digital network scheduled to be operational in the next few years.

On-line networks operated by NTT form the backbone of datacom services used in Japanese finance, commerce, manufacturing, construction, and government. Services such as NTT's Denden Multi-Access Online System (DEMOS) and Denden Real Time Sales Management System (DRES) have almost 5,000 corporate and government subscribers. NTT, in collaboration with Fujitsu, NEC, and Hitachi, has developed its Denden Information Processing System (DIPS) series of mainframe computers that are used in-house for supporting datacom services.

While the Japanese telecom market is in principle now open to all comers, NTT remains a formidable competitor. Privatization did not mean NTT had to divest any of its operations, so newcomers face a well-entrenched rival that consolidated its position by forming more than 20 joint ventures and spin-offs in 1985. The most significant tie-up came when NTT and IBM Japan joined forces to form Nippon Information and Communication Corp. The new firm will connect NTT's Data Communications Network Architecture with IBM's SNA through OSI protocols.

The major NTT equipment suppliers—Fujitsu, NEC, Hitachi, and Oki Electric—have asked the Japan Fair Trade Commission to carefully monitor NTT-IBM activities. NTT does not have manufacturing facilities, and the lion's share of its lucrative procurement contracts has gone to local producers. That relationship is unlikely to change, although NTT has attempted to give foreign firms a slice of its procurement pie. Of greater concern to many is the fear that an unrestrained NTT-IBM combine could crowd out competition in the Japanese datacom market.

Revenue figures are in millions of dollars. Each increment represents $100 million.



40

ITT CORP.

320 Park Ave.
New York, NY 10022
(212) 752-6000

This multinational conglomerate entered 1985 as the new part owner, through a 24% stake in STC PLC of Britain, of International Computers PLC. Connection with an established mainframe company, however, has not helped ITT much with its data processing ambitions. Still, DATAMATION estimates ITT's total dp revenues to have been $756 million in 1985, up 18% from the $640 million it took in the year before. Total revenues for the diversified company were $20.01 billion, up 11% from $18.02 billion in 1984.

Consolidating many of its data processing efforts, ITT last year formed a new unit, ITT Business Systems. The organization combines four formerly independent operations: ITT Courier, which makes IBM 3270-type computer terminals; Qume Corp., a producer of peripherals for oem markets; ITT Information Systems, supplier of the Xtra line of IBM PC-compatible computers; and ITT Business & Consumer Communications, a maker of central office telephone switches.

In Europe, ITT introduced a departmental office automation system based on a product of the Courier division; sales of the ITT Xtra pc were extended to the Asia-Pacific region as enhancements were made to keep up with competition; and Qume introduced its first nonimpact printer.

The switch unit has been the focus of much concern from ITT management and its shareholders. ITT has spent an estimated $1 billion, over 10 years, developing a computer-based switch known as System 12, hoping it could win both the European and U.S. telephone markets. Even though $145 million was spent trying to adapt the switch to U.S. needs, software problems were severe. Ivan Cermak, ITT vice president and president of the U.S. System 12 divison, resigned, returning to his job at AT&T Bell Laboratories. In early 1986—just after first U.S. deliveries were delayed by a year—System 12 was withdrawn completely from the U.S. market and 1,600 workers were reported laid off. ITT took a $105 million write-off on the venture.

This botched product introduction has raised questions about how well chairman Rand V. Araskog and Edmund M. Carpenter, president and chief operating officer, can live up to promises they made while fighting off a takeover attempt by Minneapolis investor Irwin Jacobs last year. Jacobs claimed he saw untapped potential in ITT, while the company's managers insisted they were pursuing a long-term strategy with higher potential payoffs. During 1985, ITT sold off 12 industrial technology companies to a New York investment firm; sold its publishing operations to MacMillan Inc.; and sold 48% of its U.K. company Abbey Life Group Ltd. in a public offering.

Retrenching further in the U.S. telecommunications market, ITT early this year arranged to sell its Dialcom electronic mail service to British Telecom. ITT had bought Dialcom in 1982 but, despite its sales of $18.9 million in 1985, had not earned a profit with the company.

Revenue figures are in millions of dollars. Each increment represents $100 million.

41

COMMODORE INTERNATIONAL LTD.

1200 Wilson Dr.
West Chester, PA 19380
(215) 431-9100

In a year that saw price cuts and increased competition in the depressed office and home pc markets, only the savviest vendors could hold their own. Don't count Commodore among the savvy: bankruptcy rumors dogged the company last year as it registered three consecutive quarterly losses and struggled to make a splash with a new product, the Amiga. Swollen inventories of earlier machines and an uncertain future for the Amiga don't paint an optimistic picture for 1986.

Commodore appears to have made a strategic mistake when it named Marshall Smith ceo and director. He replaced Jack Tramiel, now chairman of Atari Corp. Smith, who had no experience in the computer industry and no marketing background, was slow to respond to the changing home computer market, allowing inventories to accumulate; he failed to cut prices when competitors were slashing theirs. Commodore is now hoping that new president and ceo Thomas J. Rattigan will lift the company out of the doldrums. Rattigan, who assumed daily operating control, is a former PepsiCo Inc. executive who joined Commodore in the spring of 1985 as president of its North American unit.

The Amiga—which the company spent $40 million to promote—is widely praised for its technology, but has fallen short of sales targets. Last May, Commodore projected sales of 200,000 units by March 1986, but it appears that 75,000 will be a more accurate count. Observers say the machine, priced between $1,500 and $2,000, is too expensive for the home market and doesn't have enough software for the business market. Commodore's Rattigan has conceded that third-party software development for the Amiga has fallen short of company expectations.

Meanwhile, the company has inventories of the Commodore 64 and peripherals that must be liquidated at a loss. (Analysts believe that Commodore was left with about $450 million in inventory after Christmas 1984. In late fall of 1985, analysts reported the company was sitting on 1 million unsold Commodore 64 computers.) Inventories at the end of last September were $306 million, the company claimed.

Commodore reported a loss of $39.2 million for the fiscal first quarter ended last Sept. 30, following losses of $20.8 million in the quarter ended March and $124 million for the June quarter, including a $63 million inventory write-down. As a result of the June loss, Commodore's auditors qualified their opinion of the company's fiscal 1985 report, and the company's banks said Commodore wasn't complying with certain financial tests of its loans. All of Commodore's debt was converted to short-term status while the company negotiates with its banks over new lending terms.

The company showed a net loss of $237.2 million for 1985, compared with earnings of $100.3 million in 1984. Revenues were off 33.9% from 1984's $1.2 billion to $798.6 million in 1985.

Revenue figures are in millions of dollars. Each increment represents $100 million.

41*

TEXAS INSTRUMENTS INC.

P.O. Box 225474
Dallas, TX 75265
(214) 995-2011

Texas Instruments' 1985 performance was about what you'd expect from a company whose fortunes depend heavily on semiconductors and computers. Its $61 million loss in semiconductor components and $48 million loss in digital products were major factors in the company's $115 million pretax loss.

TI net sales billed in 1985 dropped to $4.9 billion from last year's record $5.7 billion. Dp revenues were no more satisfying, off 12.7% from 1984's $860 million to $750 million. Semiconductor sales plunged by $700 million to about $2 billion, while digital products dropped by $147 million to $1 billion.

Added to these problems, declining oil prices continued to erode the company's geophysical exploration market, which accounted for $407 million in sales last year compared with a peak of $649 million in 1981. To cope in this environment, the company slashed its worldwide work force by more than 8,600, primarily in semiconductors and data systems. That brought TI's total employment down to 77,872.

In the spring, Texas Instruments agreed to accept the resignation of J. Fred Bucy, president and chief executive officer, who took early retirement at 56. Spokesmen say Bucy retired to pursue other interests, such as education and his family's agricultural affairs. But the abruptness of the move led observers to conclude the company's poor performance had much to do with the resignation.

Bucy's successor, Jerry R. Junkins, 47, is an electrical engineer who has been with the company 26 years. TI watchers say Junkins will help to strengthen TI's market strategies, long a weakness at the engineering-oriented company.

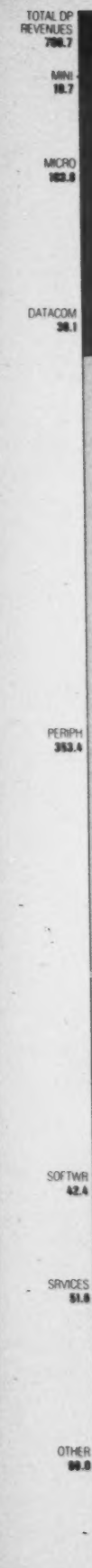
Despite all its problems, the company raised its research and development spending in 1985 to $402 million, from $367 million in 1984. (That number didn't include an additional $367 million in customer funded R&D carried out at TI). One of the results was the industry's first million-bit computer memory chip and the first working gallium arsenide semiconductor chip containing all of the functions needed in a phased array radar system.

The company continues to develop new products incorporating artificial intelligence, aiming these products at military, industrial, geophysical, and commercial applications. In the spring of 1985, it began shipping its Explorer computer, TI's first symbolic processing system. In the winter of 1986, it announced agreements with two manufacturers of computer workstations to incorporate its AI processor into their products. It will link Apollo networked workstations with the Explorer and will also allow Explorer users to access files on Unix-based workstations made by Sun Microsystems.

This spring, it introduced a new business computer system, the model 1500, the first of a series of 32-bit computers that will use the Unix system, called TI System V, and be priced from $70,000 to $408,000. Shipments will start in late summer.

*Commodore and Texas Instruments were tied for 41st place.

Revenue figures are in millions of dollars. Each increment represents $100 million.



43

C. ITOH & CO. LTD.

5-1 Kita-Aoyama 2-Chome
Minato-ku, Tokyo 107, Japan
(81-3) 497-7293

A gigantic Japanese trading conglomerate, C. Itoh acts as a sales intermediary to firms selling their high-technology wares in foreign markets. DATAMATION estimates that dp products accounted for less than 1.2% of C. Itoh's 1985 revenue of $61.4 billion (¥14.6 trillion). Because of the scale of C. Itoh's operations, that puny percentage means about $706.7 million (¥168.3 billion) worth of hardware and software changed hands.

C. Itoh's global reach extends to 143 cities in 86 countries. Hundreds of Japanese dp producers use C. Itoh's worldwide marketing network to get their goods distributed in foreign markets. Fujitsu Kasei's 3½-inch floppy disks, for example, are marketed worldwide under the C. Itoh brand name.

In the U.S., three subsidiaries peddle Japanese-made products. C. Itoh Electronics sells printers, monitors, floppy disk drives, handheld data-entry devices, IBM-compatible terminals, electrostatic plotters, and portable facsimile telecopiers. CIE Systems offers microcomputers and software, while CIE Terminals markets line printers and graphics displays that are compatible with Tektronics and DEC monitors.

In 1985, Toshiba's tie-up with Sun Micro Systems to market the U.S. manufacturer's workstations caused C. Itoh to lose sole Japanese distribution rights for Sun Micro Systems products.

In Japan, C. Itoh subsidiaries sell dp goods and services. C. Itoh Data Systems (CIDS) provides customized computer systems, CAD/CAM, factory automation, software, and dp services. A contract with IntelliGenetics Corp. in the U.S. gives CIDS marketing rights to that company's software packages for biotechnology research. C. Itoh teamed up last year with Nippon Telegraph & Telephone Corp. to form a joint videotex company, Nippon Telematique Inc. It will market private videotex systems based on NTT's Character and Pattern Telephone Access Information Network (CAPTAIN) system.

Another C. Itoh offshoot, Century Research Center Corp. (CRC), provides remote computer and and timesharing services on a Cray-1 supercomputer. CRC, which has developed a number of supercomputer software packages, also offers various scientific and engineering computing services. NEC and Cray, for instance, have several contracts with CRC for supercomputer software development.

An established relationship with Hughes Communications led to a new joint venture in 1985. Following the partial deregulation of the Japanese telecom market in April, Hughes, Mitsui & Co., and C. Itoh joined to form Japan Communications Satellite Co. The new company plans to orbit two Hughes comsats to provide high-speed data communications to Japanese users. The Japanese Ministry of Posts and Telecommunications already has approved the service and C. Itoh is developing and marketing software that will allow corporations to extend existing networks with Hughes satellites.

Revenue figures are in millions of dollars. Each increment represents $100 million.

44

MOTOROLA INC.

Motorola Center
1303 E. Algonquin Rd.
Schaumburg, IL 60196
(312) 397-5000

A good year in the communications business saved Motorola Inc. from an otherwise disastrous 1985. Overall, revenues were down 2% to $5.5 billion and earnings dropped 81% to $72 million from last year's $387 million. Until last year, profits from communications had trailed semiconductor earnings by at least half. But in 1985, the communications sector reported a profit of 10.5% on sales of $2.3 billion, while semiconductor sales of $1.7 billion were down 23% and the firm lost $38 million on the business.

Superficially, Motorola's data processing operations looked better: revenues rose 13.9% to $704 million. But the bottom line told a grimmer truth: the business produced a $17 million loss. The company says the loss was due chiefly to a reorganization of Four-Phase Systems Inc., which will henceforth be part of the General Systems Group. Other dp operations are Codex, the network and modem maker; Universal Data Systems, which also sells modems; and ISG International, the global arm of the company's Information Systems Group.

The international group introduced intelligent processors—the models 650 and 660—that enable smaller network users with from 100 to 500 terminals to construct X.25 packet switched data networks. The processors also enable users to apply switching capabilities to multiplexors that typically function only point to point.

Codex introduced a 19Kbps modem, called the 2680, that provides network management and control in an integrated fashion as well as diagnostics. It also brought out the 6700 series of distributed communications processors. Universal Data introduced 16 modems ranging in speeds from 1,200bps to 14,400bps.

What was then Four-Phase Systems came up with a series of software offerings to enhance its hardware. One was the Business Assistant, office application programs for the company's microcomputers, said to make Unix operating systems easier to use. Its other product, TransText, is a communications software program that provides a connection between departmental systems and the IBM distributed office support system (DISOSS). It also introduced an addition to its Series 2000 family of microcomputers, the 290, which supports up to 16 networks and uses the Motorola 68010 microprocessor chip.

Teamed with other units of Motorola, Four-Phase supplied the State of California Department of Social Services with an office automation network consisting of Series 2000 microcomputers and Business Assistant software as well as Codex local area networks and Universal Data Systems modems.

At year-end, Robert W. Galvin, Motorola's chairman and ceo, said, "We have reduced our costs dramatically and selling prices have stabilized." More important to the future of the company's profits, he added, "orders turned upward during the last quarter of the year."

Revenue figures are in millions of dollars. Each increment represents $100 million.

45

STORAGE TECHNOLOGY CORP.

2270 S. 88th St.
Louisville, CO 80028
(303) 673-5151

A reorganized Storage Technology Corp. prepared to emerge from Chapter 11 bankruptcy proceedings last year, wearier and perhaps wiser after a series of disk subsystem fiascos that included $100 million squandered on an optical disk drive project.

The company ended 1985 in tatterdemalion shape: it lost $57.4 million on sales of $673.4 million. Nevertheless, these numbers represent an improvement over 1984, when the company went into the red to the tune of $505.4 million on sales of $808.6 million. There was a ray of hope visible in STC's fourth-quarter 1985 numbers: on sales of $168.6 million, income of $2.2 million, $1.1 million of it from tax credits. (By contrast, in the fourth quarter of 1984, STC had lost $406.1 million on sales of $151.9 million.) These figures represented the firm's first profit in two and a half years.

The company's chairman and ceo took more comfort from the $2.2 million than did many industry observers. "Our performance in the fourth quarter gives us reason to believe we have been successful in stabilizing the business," Ryal R. Poppa noted. "Each quarter in 1985 showed marked improvement, and we expect this stabilizing process to continue.

"We are engaged in a constructive dialog with representatives of our creditors and expect that our improving order rate and financial performance will lead to a mutually agreed upon reorganization plan this year," said Poppa, noting that any plan could substantially dilute the interest of current shareholders.

The crux of STC's problems may be found in the company's 10-K form, filed with the Securities and Exchange Commission. It lists, among other things, "delays in shipments of new products, reliability problems with the 8650 disk drive, heavy investment in research and development, and increased price and performance competition. . . ."

Under Poppa's stewardship, STC has acquired a cash balance of $170 million, plus the ability to fund more than $60 million for product development. The firm also cut prices on several products in an attempt to stay competitive with IBM. These cuts include 10% off the announced price of its dual-capacity 8380E disk drive, plus a 5% reduction in upgrading costs for its single-capacity 8380 drive. Both these products were scheduled to ship during the second quarter of 1986.

Cost-cutting was also in evidence. Poppa tightened the corporate belt—selling off a $6 million jet plane—reduced inventories, and made managers submit weekly reports on finances. He got rid of about 4,000 employees and took the company out of the chip building business.

Richard R. Douglas, senior vp, marketing and services, said near year's end that preliminary orders of the new 8380 E and 8380 upgrade storage devices are "pretty much what we expected." He declined to give specific numbers, but said that despite the price cuts, his firm intended to make a profit.

Revenue figures are in millions of dollars. Each increment represents $100 million.

46

NATIONAL SEMICONDUCTOR CORP.

2900 Semiconductor Dr.
Santa Clara, CA 95052
(408) 721-5000

Like a man clinging to a life preserver in a storm, National Semiconductor Corp. last year held fast to its profitable National Advanced Systems PCM subsidiary while its bread-and-butter semiconductor business floundered, a victim of the worst chip market downturn in memory. By the end of 1985, National was ready to elevate NAS and its other systems operations—boards and the Datachecker point-of-sale business—to organizational status equal to that of the Semiconductor Group. NAS president David N. Martin became executive vice president of the new Information Systems Group.

Information Systems Group sales for the calendar year grew about 18% to an estimated $650 million, with NAS mainframe and peripherals sales accounting for about $500 million of that. National's systems business contributed about 40% of the company's overall sales for the year of $1.61 billion, down about 11.6% from 1984 revenue levels, mostly because of the semiconductor downturn.

While NAS was profitable, it was not enough to offset the disastrous plunge in the semiconductor market. Overall, National lost $93.3 million for the calendar year compared with 1984 positive earnings of $84.3 million. Despite the mounting losses, National increased its R&D spending for the year by 29% to $204.6 million.

NAS, which resells PCM and storage hardware manufactured by Hitachi Ltd., benefited by being the first PCMer to ship a double-density disk system compatible with IBM's 3380 Model E. NAS's 9080 mainframe line remained price/performance competitive with available models of IBM's Sierra series, and observers say NAS may leapfrog IBM's 3090-200 system performance with its new 9000XL, expected to ship late this summer. In fact, analysts have predicted NAS's sales could rise between 50% and 70% in 1986, primarily on the strength of the 28MIPS 9000XL. EDS-GM, Shell, and British Petroleum are among its best customers. If the predictions hold, NAS's share of the IBM-compatible mainframe market could grow from an estimated 5% now to 7% or 8%.

With NAS business booming and a gradual firming of the semiconductor market, analysts expect National to return to profitability by this August. Over the long term, however, the company has proved to have holes in its chip business. Specifically, its 32000 32-bit microprocessor family has picked up only about 8% of the total micro market. That share could be threatened later in the year when Intel is expected to begin shipping its 80386 32-bit microprocessor in large volumes. If National can't improve its microprocessor market share, its semiconductor business will be forced to rely on its commodity memory products, which should remain under severe price pressure. If National's semiconductor business can't break out of its slump, National in 1986 may have to rely more than ever on data processing markets for growth and profitability.

Revenue figures are in millions of dollars. Each increment represents $100 million.

47

RICOH CO. LTD.

15-5 Minami-Aoyama 1-Chome
Minato-ku, Tokyo 107, Japan
(81-3) 479-3015

Ricoh has been reaching out for partners to help it move more aggressively into office automation markets. That strategy paid off in 1985 when dp revenues skyrocketed to $634.7 million (¥151.1 billion), which represents an increase of 35%, according to DATAMATION estimates.

Total corporate sales rose 10.3% and net income grew by 8%. The appreciation of the yen has necessitated increases in overseas pricing, hurting Ricoh's competitiveness in some product areas. Still, exports accounted for more than 35% of the company's total sales.

Much of Ricoh's growth came from sales of the facsimile machines, the mainstay of Ricoh's information processing division. Pitney Bowes, Kalle-Infotec, Savin, and Hermes all rely on Ricoh for facsimile equipment. Declining fax prices, however, have hastened Ricoh's move into more lucrative dp markets.

Ricoh hopes that laser printers will be one of those lucrative markets. Last year the Japanese firm inked an oem contract to supply DEC with about 1,000 laser printers a month. While the laser line looks promising, Ricoh's conventional printer business has turned sour and gone into the red because of competitive pressure.

Image processing is a key technology for automating the Japanese office. Ricoh remains a contender in the emerging market for office systems that integrate fax, Japanese word processing, and copier functions.

A three-year oem contract, signed in 1984 with AT&T-International for fax machines, strengthened Ricoh's ties to the American telecom and dp company. Ricoh now sells AT&T's 3B minicomputer series in Japan.

In September 1985, AT&T-I established a joint venture to manufacture and sell AT&T's key telephones in Japan. Ricoh has also expressed an interest in manufacturing a line of Unix-based business microcomputers for AT&T, but the telecom giant's conflicting tie-up with Toshiba will probably push Ricoh out of the picture.

AT&T's reluctance to provide Ricoh with the telecom technology needed for its integrated systems strategy hasn't hurt the Japanese firm's efforts to move into office automation. Ricoh has signed up other manufacturers to round out its product line. Hitachi produces a series of 16-bit personal computers for the company.

At the beginning of this year Ricoh reorganized its dp product divisions into one group. The step, which helped the company's marketing effort, also gave Ricoh some synergy in new product development. One example is the new Ricom I series of business computers that combine voice recognition and image processing functions. Nevertheless, Ricoh faces tough competition from Japanese competitors Matsushita and Canon, both of which also are zeroing in on the integrated office systems market.

Revenue figures are in millions of dollars. Each increment represents $100 million.

48

TANDEM COMPUTERS INC.

19333 Vallco Parkway
Cupertino, CA 95014
(408) 725-6000

Since Tandem Computer is in the fault tolerant business, maybe it was equipped to find 1985 more tolerable than some of its Silicon Valley neighbors did. While revenues were up 12% to $634.6 million, earnings dropped 31.8% to $31.9 million. It was a far cry from recent years in which both earnings and profits were growing like weeds, years in which 25% improvements were seen as disappointing.

The on-line transaction processing firm's fourth quarter looked best of all, said president James Treybig, and sales for that period were up only 14% over 1984: $173.8 million as opposed to $153.1 million. "During that quarter, business in the U.S. improved for the first time this year," he noted.

Last year, its tenth year of dominating the fault tolerant market, Tandem introduced its NonStop EXT machine, the smallest of its fault tolerant products, one also able to function as a standalone node outside the computer room environment. Selling for $120,000, the device offers the performance of Tandem's two-processor NonStop II system, but combines all systems hardware and disk storage in a single cabinet to which other modules can be added.

Yet another new product was Fox Link, which permits the interconnection of up to 14 NonStop II and NonStop TXP systems located as much as one kilometer apart. Since each system can contain as many as 16 processors, as many as 224 processors can be linked in a local cluster. Fox Link claims data transmission speeds almost 300 times faster than those achieved with conventional dual 56Kbps communications lines. Other new products included an enhanced version of its Guardian message-based operating system for NonStop systems, and a series of information management technology products built on Tandem's Transfer software. These products include PS Mail for electronic mailing, filing, and distribution of documents; PS Text Edit and PS Text Format software for text editing and formatting; Faxlink for moving pages and pictures electronically; and PC Link software for integration of IBM PCs and compatible micros into distributed networking applications. Last year, Tandem spent $71.6 million on R&D to keep the new products coming, 26% more than in 1984.

IBM inserted one fly into Tandem's ointment during the year. Stung when Tandem landed a lucrative $10 million contract with retailer J.C. Penney, IBM decided it had to have a fault tolerant offering of its own, so it cut an oem deal with Stratus Computer Inc. of Marlboro, Mass. Here, Stratus will sell an unspecified number of its OLTP machines to IBM; Big Blue will then tailor them for applications to include banking, credit card verification, and airlines reservations, three markets Tandem has heretofore had sewn up. In an apparent response, Tandem this spring announced the Nonstop VLX system, specifically targeted at its banking, telecommunications, and airline customers, and described as 65% faster than existing Tandem machines.

Revenue figures are in millions of dollars. Each increment represents $100 million.

49

TELEX CORP.

6422 E. 41st St.
Tulsa, OK 74135
(918) 627-2333

Telex Corp. performed unusually well in a year when most of IBM's plug-compatible competitors fared quite badly. Telex's 1985 sales of $683.1 million advanced 30.4% from $523.8 million, and net income rose by 41% to $67 million. Computer products account for 86% of sales and a second company, Telex Communications Inc., accounts for the rest.

The company has become the largest independent supplier of IBM-compatible terminals, terminal products, and controllers for large mainframes. It holds 14% of the market for IBM 3270 terminals, a market share that is growing at 2% a year. Telex estimates this market to be worth $1.25 billion.

Telex holds a 29% share of the airline reservation terminals business, following its acquisition of a division of Raytheon Corp.

Last December, Telex paid about $28 million to acquire United Technologies Communications Co. and subsequently changed the name to Telexecom, making it a division of Telex Computer Products Inc. (TCP). With the acquisition of Telexecom's telecommunications business, Telex now holds a 2% share of the private branch exchange (PBX) market, currently dominated by AT&T and Northern Telecom Inc., each of which holds 23%.

In its 1986 fiscal year, which started last April 1, the company expects its revenues to top $850 million, even though it is beginning the year with a backlog $10 million lower than the year before. The company explains that it trimmed its terminal product lines after the acquisition of Raytheon, reducing order volumes slightly.

About half of Telex Computer Products' volume comes from outright sales, 25% from leases, and the rest from maintenance and other services. Corporate R&D expenditures increased 65% in its 1985 fiscal year and now run at about $2.4 million a month.

Last year Telex introduced its first internally developed color printer and new terminal controllers. It announced enhancements to its so-called Intelligent System series, including an interface board that enables travel agents to handle reservations and ticketing while using MS/DOS software for their local business needs.

This summer, as a result of its two recent acquisitions, the company will unveil a new line of airline reservation terminals bearing the Telex logo. It will also introduce an IBM 3270-compatible voice-data terminal using technology it obtained through its Telexecom acquisition. A new line of terminals that are compatible with IBM's smaller systems, the System/36 and 38, will be introduced as well.

Telex's market for oem tape drives is expected to remain depressed this year, but Telexecom, which was losing money when acquired, is expected to break even this summer and to be doing well by the fall of 1986. And Telex says it is beginning to regain overseas sales it surrendered when it sold some European subsidiaries eight years ago; last year it opened a Telex Computer Products plant in Scotland.

Revenue figures are in millions of dollars. Each increment represents $100 million.

50

NIPPON UNIVAC KAISHA LTD.

2-17-51, Akasaka, Minato-ku
Tokyo 107, Japan
(81-3) 585-4111

A venerable name lives on in Japan under the banner of Nippon Univac, the product of a Sperry alliance with Mitsui & Co., Mitsubishi Electric, and Oki Electric.

The tie-up goes back to 1958, when the company was established as a joint venture with trading conglomerate Mitsui to market Sperry dp products in Japan. Reflecting their importance as primary equipment suppliers, both Oki and Mitsubishi Electric each have taken a 2.5% equity stake in Nippon Univac. Sperry and Mitsui have equal 34.2% shares of Nippon Univac's stock. The balance is owned in small pieces by Japanese financial interests.

The year 1985 wasn't a bad one for Nippon Univac. DATAMATION estimates 1985 earnings were up 6.1% to $10.4 million (¥2.5 billion) on sales of $552.9 million (¥131.6 billion), representing revenue growth of more than 11%. As is typical in Japan, double-digit sales growth came with a razor-thin profit margin of only 1.6%, down from 1.7% the previous year.

Imports from Sperry accounted for only about 17% of Nippon Univac's total sales, mainly for the Series 11 mainframes and peripherals manufactured in the U.S. Those imports are likely to decline in the future. Univac mainframe sales in Japan are sagging—down about 7% in 1985—because of Sperry's slow response to Sierra. Oem agreements with Oki Electric, the Seiko Group, Toshiba, Tokyo Sanyo, Mitsubishi Electric, and Northern Telcom account for about 70% of Nippon Univac's dp sales.

Oki Univac, a joint venture with Oki Electric, manufactures part of the Nippon Univac product line in Japan. Computers produced by Oki Univac account for about 13% of Nippon Univac's sales.

Although some of the DASD for its mainframes come from Sperry, Hitachi also supplies some of Nippon Univac's disk drives. The relationship with Hitachi seems likely to strengthen in the future. Throughout 1985, Sperry and Hitachi worked out a technology exchange agreement covering VLSI, peripherals, software, and cpu design for mainframes. Tokyo's financial circles have since buzzed with rumors that Hitachi was negotiating to take over at least a portion of Sperry's share of Nippon Univac as part of the deal. Tapping Nippon Univac's sales and services network as well as its pool of 2,000 soft-ware engineers would be of great strategic value to Hitachi.

With 500 specialized software engineers working at subsidiaries and joint ventures, Nippon Univac has one of the largest pools of employees in Japan with experience building dp systems from a wide variety of oem equipment. The firm's strength in software is beginning to look increasingly attractive to cash-rich Japanese firms needing the software expertise required to compete in the fastest-growing dp markets. Sperry's joint venture in Japan may be an important bargaining chip for putting together future alliances with Japanese manufacturers.

Revenue figures are in millions of dollars. Each increment represents $100 million.

51
INTERGRAPH CORP.

1 Madison Industrial Park
Huntsville, AL 35807-9985
(205) 772-2000

Intergraph Corp., the CAD/CAM specialist that's been a favorite among investors in high-technology companies, reported a modest 7.7% increase in profits in 1985, to $67.8 million. Total sales were up a more impressive 30% to $526.4 million. Compared to 1984, when revenues had leapt 60.2%, the good news paled. Management blamed some of the slowdown on increased R&D funding and high marketing costs. (In 1985, the company exhibited its products at nearly 30 different trade shows; it will trim down to 11 shows in 1986.) Still, in the turbulent world of CAD/CAM, where 1984's number one company, Computervision, was last year's number three, Intergraph came out okay. Shareholders were cheered in May by a 2-for-1 split in the company's stock.

Last year, Intergraph began delivering its 32-bit desktop workstation, the Interpro 32, aimed at the computer aided engineering market. Shipped late—unforeseen software problems—the product is compatible with IBM PCs and the Ethernet local area network and emulates DEC, Tektronix, and IBM terminals.

The company's fastest growing market is in manufacturing. It was one of the vendors that participated in a manufacturing automation protocol (MAP) exhibit at the Autofact factory automation conference in Detroit. The General Motors-sponsored protocol aims at standardizing interfaces in factory automation networks, and is being advocated by Boeing and other large users.

While building its own file processors, communications processors, and graphics processors, and its own workstations, the company buys its board sets from DEC. This frees Intergraph to concentrate on software development. Its DEC products range from the MicroVAX II to the VAX 8600-based system at the very high end of the market.

More than two thirds of its volume, 69%, is from U.S. markets and another 18%, from Europe. Intergraph recently beefed up its Japan sales operation—to 26 persons—and set up a software development center in France to exploit what it sees as a growing overseas market.

52
COMPAQ COMPUTER CORP.

20555 FM 149
Houston, TX 77070
(713) 370-0670

Compaq Computer's 1985 performance was a refreshing contrast to that of many other computer companies in a bleak year of price-cutting and deferred buying.

The company's 1985 revenues of $503.9 million rose 53% over the 1984 figure of $329 million, and its earnings of $26.6 million represent an increase of 106.2% over 1984. This was based on shipments of more than 200,000 personal computers in 34 nations, including the U.S.

The performance led president and ceo Rod Canion to declare euphorically early this year that the four-year-old company's formative years are over: it's become a major company.

This is not to say the company has no problems in the markets it has staked out: faced with competition from more than 100 other makers of pcs together with a growing flow of low-priced products from the Far East, the company has been forced to make some price cuts of from $500 to $800 on earlier models and said it soon may have to turn out lower-priced systems to compete with the imports. As PC clones become commodity goods, Compaq could stand to lose sales. In addition, IBM's recent price cuts and the introduction of the 13-pound IBM PC Convertible may prove troublesome.

Otherwise, all has been going well for Compaq. The key, many observers say, is its kid-gloves treatment of its dealers: the company offers higher gross margins to dealers; it is compatible with IBM and thus protects its dealers' investments in software, peripherals, and support; and it doesn't have a direct sales force. Last year it became the first computer manufacturer to sell to the federal government through dealers, when it signed an agreement with the General Services Administration. Compaq dealers sold to government agencies without going though extensive federal bidding processes. Compaq has similar deals with four states.

It keeps its own house in order, too. Last year it launched an inventory management program that reduced its inventory balance by 12% to $76 million from $86 million at year-end 1984. In effect this added $42 million to Compaq's cash balance.

Compaq's research and development budget, which runs at around 3.2% of sales, reached $15.9 million in 1985, $5 million more than the year before.

The company, whose main products have been portable and desktop computers that are compatible with IBM's offerings, announced higher-end versions of these last year—the portable 286 and desktop 286 that offer 30% faster processing speeds than the IBM AT. The new Compaqs incorporate the Intel 80286 microprocessor, a much faster successor to the Intel 8088. Early this year, Compaq introduced three smaller models of its Portable family, called the Portable II. The packaging was redesigned to make each product 30% smaller and 17% lighter, and they were priced, according to memory capacity, at from $3,499 to $4,799. The Portable II family weighs 23.6 pounds.

53
COMPAGNIE GENERALE D' ELECTRICITE

56 rue La Boetie
75008 Paris, France
(33-1) 456-31414

Compagnie Générale d' Electricité (CGE), the nationalized electrical engineering group, has widespread interests in computer services, telecommunications, and electronics, concentrated in Groupe Alcatel, which hauled in an estimated $480 million (FF4.3 billion). Software services and systems engineering accounted for $312 million, whereas about $145 million came from digital PBXs and terminals. At the lower end, just over $20 million stemmed from sales of micros.

While parent company CGE has been trying very hard to seal a deal with AT&T on central office switches, Alcatel itself has been busy working out the organizational details of its merger with another big French nationalized electronics group, Thomson. CGE took over Thomson Telecommunications on Jan. 1, 1984, but the fusion didn't become final until last July, 18 months ahead of schedule. The Thomson name has essentially been eliminated by Alcatel to prevent confusion. The one major exception is Thomson-CFS Telephone, which markets private PBXs and telephone equipment in competition with Alcatel's affiliate, Telic. Thomson-CSF Telephone's digital PBX revenues amounted to about $67 million in 1985, compared to Telic Alcatel's $56 million.

Alcatel has two small subsidiaries involved in dp hardware, Alcatel Thomson Micro-Informatique Professionnelle (ATMIP) and SMH Alcatel. Inherited from Thomson, ATMIP sells the Micromega micros that are produced by Eagle and Fortune in the U.S. In fact, Alcatel has a 25% stake in Fortune, which makes its 32-bit Unix machine. One quarter of ATMIP's $20 million in sales were derived from exports. The other hardware company, SMH Alcatel, which produces word processing systems and desktop terminals, had revenues of $22.5 million last year.

In the software and services sector, Alcatel controls two major companies and two smaller ones. The biggest, Générale de Service Informatique (GSI), had revenues of $138 million in 1985, up from $128 million the year before. GSI sells general management and vertical application packages. One of its most important products, the Tolas financial management system, was developed by GSI's United States subsidiary, Transcom.

The other big services company under Alcatel's wing is SESA (Société d' Etudes des Systèmes d' Automation), which specializes in network engineering. Alcatel, which owns 97% of GSI, has a smaller, 51% stake in SESA. Last year the company pulled in revenues of $95.8 million, about

30% coming from exports. SESA is the architect of France's packet switched data network Transpac; its biggest customer is the French Defense Ministry. In addition to its bread-and-butter network operation, SESA also has a growing systems and software engineering business. The other two services firms in the Alcatel group are Answare, which contributed revenues of roughly $40 million, and TITN, which chipped in $38 million.

54
COMDISCO INC.

6400 Shafer Court
Rosemont, IL 60018
(312) 698-3000

Comdisco has successfully carved a niche out of Big Blue's hide, leasing new and used computers. Last year, the big news in Rosemont was the attack of the IRS agents: the Feds said Comdisco owed in excess of $200 million to settle audit claims for 1980, 1981, and 1982, based on conflicting interpretations of tax shelter regulations. Kenneth N. Pontikes, Comdisco's chairman and president, managed to speed the case's progress through tax court, with happy results for the company: in early 1986 the case was settled, Comdisco paying a mere $6.1 million.

The tax dispute was viewed as a big negative on Wall Street, where Comdisco's stock dropped $8 in one day. But MIS managers continued leasing from the company.

In fact, during 1985 Comdisco's dp business was up 20.7% to $467.9 million. Earnings were amazing, bounding up 93.6% to $57.5 million, even before an extraordinary payment of $30 million, which made the increase a whopping 195%.

Many industry observers had thought 1985 would be a tough year for Comdisco as IBM moved customers up to the Sierra. Indeed, Comdisco experienced a slowdown when IBM announced its new Sierra machine, but once the Sierra was delivered, Comdisco made profitable new deals selling and leasing the used 3080s that Sierra was replacing. Pontikes claims the used machines are bargains compared to Sierra measured in MIPS for the money.

Efforts to broaden the company's revenue base have been far flung, including a Disaster Recovery service and risk arbitrage. So far, none of these efforts have yet approached the financial rewards of computer leasing.

55
BRITISH TELECOM PLC

81 Newgate St.
London EC1A 7AJ, England
(44-1) 356-5000

Brokers cheered on the floor of the London stock exchange the day British Telecom (BT) went public in 1984. They called the $6 billion flotation, the largest share issue ever made, "The Sale of the Century." In a single day 51% of the government-owned telecom monopoly was transferred into 1.7 million private hands.

Britain is the first, and so far only, European country to have taken the momentous step of selling off its telecommunications authority.

Some critics say that sale was at bargain basement prices. But BT chairman Sir George Jefferson had no such doubts. "I am pleased to be able to record notable achievements both in the successful transition of British Telecom into the private sector and in a satisfactory year's trading as the new regulatory environment has been taking place," Jefferson wrote in BT's first annual report last year.

Jefferson's pleasure was perhaps premature, for, in truth, British Telecom's first year as a publicly held, private company was less than thrilling. Revenues rose a tame 6%, to $10.5 billion (£8.1 billion), and earnings slipped 12%, to $1.2 billion (£958 million).

A newcomer to the DATAMATION 100, British Telecom derives the bulk of its business from the communications side—Britain's sprawling telephone network, to be exact. Still, the company's computer-related business produced 1985 revenues of $455.1 million (£355 million), making British Telecom the second biggest U.K. dp company.

In addition to its telecom and dp activities, the newly deregulated company also has interests in cellular radio, undersea cables, and satellite communications. BT has also branched out into overseas markets. Chairman Jefferson has already made two moves abroad, both in Canada, paying $250 million for a controlling interest—51%—in PBX company Mitel and $20 million for telecom distributor CTG. The Mitel deal took almost a year to complete. The delay was due to the intervention of the British Monopolies and Mergers Commission, which feared that the BT-Mitel tie-up might stifle competition in the U.K.'s PBX market.

British Telecom, like its smaller U.K. counterpart, Mercury Communications, operates under a government license that establishes the basic business ground rules. A watchdog committee, called the Office of Telecommunications (Oftel), fields complaints from BT's customers, suppliers, and competitors.

One of the biggest beefs about British Telecom came when the company signed a $150 million contract with Thorn Ericsson for AXE-10 digital PBXs. The move brought howls from locals Plessey and GEC, both suppliers of BT's homegrown System X public exchange. Oftel, which warned British Telecom to limit its overseas purchases, has also been investigating complaints about a 12% increase in private line charges and gripes about unfair competition from suppliers of end-user equipment.

56
VOLKSWAGEN AG

Postfach 3180
Wolfsburg, West Germany
(49-53) 6190

West German car manufacturer Volkswagen, 40% of which is owned by the West German government and the state of Lower Saxony, had total dp revenues of $452.9 million, up 16% from 1984, produced by its subsidiaries, German-based Triumph Adler, U.S.-based Pertec Computer Corp., and Pertec Peripherals.

Triumph Adler's dp revenues were up an encouraging 17% when measured in local currency, and after years in the red, the company was inching back toward profitability: in 1985, the shortfall was only $34 million, compared with a dismal $122 million loss the previous year. The situation was similar in the U.S.: both Pertec subsidiaries suffered from the slack U.S. dp market and new managers were moved in to head the firms. For 1985, Pertec Computer Corp. contributed $42.5 million to Volkswagen's dp take, while Pertec Peripherals chipped in $43.7 million. Neither company made any profit.

These grim figures inspired Volkswagen to take a different approach: in 1986 it sold Triumph Adler to Olivetti for a 5% stake in the Italian company and an undisclosed amount of money.

Pertec Peripherals' rough ride was partly the result of a shake-up of its entire product line. The company announced last year that it was phasing out almost all its tape products, including the T1000, T6000, T7000, T8000, and T9000 drives, which were based on old technologies. Also on the scrap heap went its D3000 series of disk drives.

Last year Pertec added the FS2911 quad density tapes and new Winchester drives caled the DX368 and DX548.

Pertec Computer's new president Ed Hale, meanwhile, spent the year rebuilding the company. During 1985 he closed down one facility and fired over 100 people, about a third of the work force.

Triumph Adler was also reshaping its business. Although the company is proud that one in seven of the electronic typewriters bought around the world is a TA machine, the longer term corporate strategy is full integration of office automation products, based on the company's main dp line, the M32 multi-user system running under the company's own Xenix derivative, Tanix. This is sold alongside TA's Alphatronic office products, its P60 and P50 IBM-compatible personal computers, and the Ergonet network for pcs, typewriters, and M32s.

These products brought in 25% of Triumph Adler's overall revenues, and the company has set a target of getting 50% of its business from data processing by the end of the decade.

57
COMPUTERVISION CORP.

100 Crosby Dr.
Bedford, MA 01730
(617) 275-1800

The year 1985 was the one in which Computervision began to resemble the last dinosaur in an emerging world of warm-blooded mammals. The old ways of computer aided design that the company pioneered had given way to the new: suddenly the CAD landscape was populated by workstations, pcs, and industry-standard operating systems. Not only had new generations of CAD moved to general purpose computers, but new generations of CAD applications software had shifted to microcomputers at prices that were a fraction of earlier systems.

Unfortunately for the Computervision bottom line, its renowned library of CAD/CAM/CAE software has yet to make this shift to other popular computers. Failure to adapt cost the company dearly. Mounting quarterly losses almost drove the company into extinction in a single year and forced a 26.6% reduction in its work force. The bottom line revealed losses of $80.8 million, compared with a $41.4 million net profit a year earlier.

In a market that is growing at 25% a year, Computervision's sales dived 21% to $441.1 million, and the company fell from its number one spot in the market to a wobbly number three (behind IBM and Intergraph).

The U.S. picture was even more dismal than these numbers suggest. The domestic market provided only 42% of the company's total revenues, compared with 55% a year earlier.

Computervision was in the odd position of getting the lion's share of its dwindling sales from Europe (48%, a huge jump from 35% the year before).

The losses represented a resounding no from customers to the new products that Computervision began to ship late in 1984—the high-end CDS 5000, based on an IBM 4300, and a low-end workstation, the CDS 3000, built by Sun Microsystems. But while the company attempted to broaden its proprietary product line with these oem offerings, it failed to outfit them with effective new software or to offer networking links to existing products.

The critical missing ingredient to a successful rebound of the company is the conversion of its acclaimed CADDS 4 software library from a machine language version of FORTRAN to the more portable Unix operating system, so that it can operate on the CDS 3000 workstation—and eventually on popular pcs. This complete porting process isn't expected to be completed until late this year, at best, and in the interim the company has undergone a management shake-up aimed at getting ballooning costs under control.

58
MARTIN MARIETTA CORP.

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

First the good news. This space- and defense-oriented company had a banner 1985, with sales increasing 12% to a record $4.4 billion from the previous record of $3.9 billion in 1984. Net income rose a tidy 41.7% to $249.4 million, there was a 3-for-2 stock split, and the quarterly dividend was raised 12%.

Now the bad news. Martin Marietta Data Systems (MMDS), the nova of 1984, burned much less brightly. True, both MMDS and Martin Marietta Information & Communications Systems had combined revenue growth of nearly 50% and they are the fastest growing of any Martin Marietta elements. And it's true that sales looked great on paper, rising 18.7% to $430 million from $361.5 million in 1984. But something must have been lost in translation. By the time that number reached the bottom line, it had become a loss of $10.3 million. That's a rather precipitous decline from the $18.9 million MMDS earned in 1984.

"We had two major problems," says Patrick J. Zilvitis, who in October became president of MMDS after 17 years as IBM's manager of large account personal computer sales and marketing organization. "After going back and forth on an old fixed-price contract with the [U.S.] Department of Labor, we went back with them and redid it.

"Our second problem was the packaged software business," Zilvitis says. "That may be the reason there were management changes at the top. We consolidated four different groups into one. They had a very ambitious revenue target and they missed it by a lot."

By about 20% to 25%, according to Zilvitis. Much of that shortfall occurred in second-half sales of RAMIS II, MMDS' flagship product. Development spending was another downer. Slotted for 15% of expenses, it finished at a hefty 22%.

By the end of 1985, though, MMDS seemed on its way to righting the wrongs. Zilvitis will have several new products to help him back to profitability. Foremost among them is RAMIS II's Release 85.3, shipped in December. That on-time, as-promised enhancement should alleviate user dissatisfaction with RAMIS II, one of the leading fourth generation languages despite its well-chronicled problems.

The company won new contracts on a number of command, control, communications, and intelligence programs; and also introduced Unison Workstation Manager, a DOS shell program that provides a uniform interface to all pc routines, and Consensus, an integrated on-line applications development system that gives users a selection of programming languages and environments.

59
DATAPOINT CORP.

9725 Datapoint Dr.
San Antonio, TX 78284
(512) 699-4427

The 1985 computer recession was but another problem on a long list suffered by Datapoint Corp., a onetime high-flyer that has continued to disappoint both investors and customers. At year's end, the company reported a net loss of $62.1 million, compared with a profit of $24.2 million the year before. Revenues also suffered, dropping 27.3% to $404.2 million.

Datapoint's problems began in late 1982 when it was forced to write down $15 million against nonexistent orders reported by an overeager sales staff. That brought its stock down from a high of $67 in 1981 to less than $11 (it was priced at around $6 this spring). Last year it underwent the turmoil of a takeover bid by Asher Edelman, a then relatively new member of the growing breed of corporate takeover artists. Edelman took control in March 1985, owning about 11% of Datapoint's nearly 17 million shares and creating doubts in customers' minds as to whether the company would continue to exist as a full-service computer vendor.

Their fears may have been realized in the events that followed. The company began shedding itself of recent acquisitions, including its Inforex subsidiary and its huge service business, Intelogic Trace Inc.; Edelman and Datapoint's management turned down a bid of $177 million by TRW for the service company and instead spun it off to shareholders; and Edelman and other insiders last September announced a plan to take Datapoint private through a $100 million leveraged buyout, which is about $6 a share, considerably less than the $23 Edelman had offered to take over the company earlier in 1985. This May, the leveraged buyout scheme was dropped.

Meanwhile, Datapoint had been pared from a thriving organization with some 10,000 employees housed in 41 buildings in San Antonio in 1981 to about 4,000 people in 15 buildings. And financial observers were suggesting that, if the company were taken private, Edelman might start hacking away at the company R&D spending and might even liquidate Datapoint. While denying this, Edelman admitted that "anything is possible."

Customers were given some hope when Datapoint introduced three new products last year. Its Starship I processor, with 4Mb of main memory, offered users a bridge from DOS operating systems to the newer RMS (resource management system) operating system; the MINX (Multimedia Information Network Exchange) system, a product that will integrate video and office communications with personal computers and local area networks in advanced offices; and a joint project with Japan's Fu-

jitsu Business Communications to build an integrated voice and data system.

The products are aimed at Datapoint's existing customer base of some 6,500 local area networks. The company said that later in 1986 it will be seeking new customers.

60
CONVERGENT TECHNOLOGIES INC.

2700 North First St.
P.O. Box 6685
San Jose, CA 95150-6685
(408) 434-2848

Saddled with bad luck and charges of mismanagement, Convergent Technologies Inc. did the impossible last year even as it took on a new chief operating officer. Having written off $13.8 million in losses early in 1984, it then buckled down to emulate Lazarus. By the end of the year, many in Silicon Valley were saying the firm had a fighting chance. Corporate revenues for 1985 were $395.2 million, up 9.2% over the $361.7 million posted for 1984. From enduring a net income loss of $13.8 million in 1984, Convergent was $11.5 million in the black at year-end 1985.

Many were saying that Paul Ely, formerly an executive vp of Hewlett-Packard, had saved the mini maker. When a rival was named ceo at HP, Ely moved to Convergent, replacing founder Allen Michels, a technological whiz somewhat short on business and management skills. "I think Convergent got a bargain [in Ely]," said the amiable Michels when he left in November.

Ely made a number of fast moves. He scrapped the company's Workslate microcomputer offering and moved quickly to mend fences with Burroughs Corp. For months it had been no secret that Convergent's NGEN, which it had been selling to Burroughs, had more bugs than a June night in Biloxi. Burroughs was rumored to be considering pulling out of its agreement with Convergent, worth an estimated $45 million annually. Late in the year Ely announced that Convergent would begin shipping the machine, which Burroughs sells as the B28, early in 1986.

Industry analysts were speculating that 25% of Convergent's revenues were coming from its deal with AT&T Information Systems (AT&T-IS). Before Ely's arrival, Convergent had contracted to build Unix 7300 PCs for the unregulated arm of the phone company. Other products Convergent launched for AT&T-IS last year included the enhanced Unix PC Model 3B1 and the Personal Terminal 510A. Earlier, Convergent announced Mighty Frame, a 32-user machine based on the Motorola 68020 processor. The machine's operating system is CTIX, Convergent's version of Unix. An NGEN enhancement was also rolled out. Called Series 286 NGEN, the 80286-based machine was claimed to run twice as fast as the previous 80186 device.

In November, Convergent announced plans to acquire 40% of Baron Data Systems of San Leandro for $14.6 million. Baron makes computer systems for the legal and medical markets. Also announced was a proposed merger with LAN maker 3Com Corp. of Mountain View, Calif. If it had been consummated, 3Com shareholders would have owned 27% of the new company, to have been called Convergent. The stock transaction was valued at $126.5 million, but failed at the last minute after 3Com's bankers said the deal would represent a loss as structured.

61
RACAL ELECTRONICS PLC

Western Rd., Bracknell
Berkshire, England
(44-344) 483-244

Modem maker Racal simply did not connect in 1985. The company's dp revenues were a wrong number, down 17.7% from 1984 to $380.8 million. The overall corporation's net income also suffered, falling 11% to $138.5 million.

The recession that hit American datacom last year was a real blow. The company's two U.S. subsidiaries, Racal-Milgo and Racal-Vadic, which used to account for 40% of total revenues, were chipping in only 27% when half-yearly results were announced.

Preparing for hard times, Racal trimmed its U.S. work force by 1,200 and postponed its plans to expand a Miami manufacturing plant that makes Racal-Milgo's three new Omnimux 82 multiplexor models. In October, Racal-Milgo unveiled a series of diagnostic data service units, a fiber optic multiplexor, and encryption devices that use the DES algorithm. A month later, Racal-Vadic, which concentrates on the lower end of the market, came out with 9,600bps and 1,200bps modems.

Racal-Milgo has found itself under increasing pressure from IBM. Big Blue's token ring local area network, introduced last year, is a direct competitor to Racal's Planet ring network. In a bid to keep ahead of IBM, Racal announced IBM-compatible, file server software for Planet and a controller that can hook together four of the networks. Racal claims that its interconnected rings can support up to 2,000 users, compared with 260 on the IBM offering.

There will be no new products from Racal's AI joint venture with Norwegian mini maker Norsk Data. Racal-Norsk, which was set up by the two companies in hopes of developing wares for expert systems applications, has been closed down. Other communications market opportunities, however, opened up last year. The company's Australian subsidiary won a $135 million contract in September to supply the Australian Department of Defense with a digital trunk communication system. Racal also managed to pull off two other large communications deals in 1985—one for $46 million with the U.S. Postal Service and another valued at $15 million with Japan's Nippon Telegraph & Telephone.

The company also took steps to win more communications and electronics contracts in the States and Canada. In August, it formed Racal Corp., which will oversee the operations of all its North American companies. David Elsbury, who is deputy ceo of the parent company, was named president of Racal Corp.

62
CRAY RESEARCH INC.

608 Second Ave. S.
Minneapolis, MN 55402
(612) 3333-5889

The supercomputer giant had another super year in 1985. In response to the strong demand for supercomputer power from industry, government, and universities, Cray shipped 28 units, up from 23 in 1984; 55 processors were installed in 1985, up from 38. Four of the supercomputers went to international sites, and Cray now has an installed base of 115 machines worldwide, representing 79 customers; 79 of the machines are in the U.S. and 36 are installed abroad.

Company revenues were $380.2 million in 1985, up a whopping 66.1% from 1984. After-tax revenues were $75.6 million and net earnings were up 66.5%. R&D expenditures were 13% of revenue, or $49.2 million. Over the last five years the company claims to have spent $160 million on R&D and plans to spend half that, $75 million, in 1986 alone.

The powerful, four-processor Cray-2, developed by a team lead by founder Seymour Cray, was introduced in June 1985, and by year's end was installed at two sites.

In the competitive arena, Cray is "not standing still," asserts chief financial officer John Carlson. New products in the works include the Y-MP, a follow-on product to the X-MP, due for release in 1987 but rumored to be shipping early; the Cray-3, under design by Seymour Cray, which will utilize gallium arsenide technology; and a project under design by Steve Chen, who headed the X-MP design team, for a silicon-based multiprocessor supercomputer.

The company expects 1986 to be another good year. Carlson expects the Gramm Rudman Act to have little impact on 1986 government orders and installations because of the Reagan administration commitment to defense spending. The Strategic Defense Initiative holds "tremendous potential for Cray," he states. One third of 1986 revenues are earmarked for software development, the plan being to standardize the company's product line on the Unicos operating system. A new FORTRAN compiler will be available by midyear. Cray expects supercomputer shipments to jump from 28 to 40 units this year and processor

9-TRACK MAGNETIC TAPE FOR YOUR IBM PC

$3495.

At last you can access large databases of information stored on your mainframe computer. Our "TAPE CONNECTION" system is used by hundreds of companies for label processing, report filing, check processing, sales analysis, and off-line printing. Our system features:

- 3 MB/MIN TRANSFER
- LABELLED TAPES
- 45 MBYTE/REEL
- MULTIVOLUME FILES
- 1600 OR 6250 BPI
- RECORD SELECTION
- 10000 HOUR MTBF
- EBCDIC-ASCII FORMAT
- SMALL SIZE 12"x 20"

A complete system including tape drive, card, cable, and software is priced at **only $3495.**

Since 1982, we have installed thousands of conversion systems at customer locations around the world. Call us today for help in connecting a 9-track tape system to your IBM PC.

Flagstaff Engineering
1120 W. Kaibab • Flagstaff, AZ 86001 • Telephone 602-779-3341

CIRCLE 52 ON READER CARD

shipments to double, from 56 to 112. With sales figures like these, Cray's closest supercomputer competitors, CDC and Japan Inc., have a tough act to follow.

63
DATAPRODUCTS CORP.

6200 Canoga Ave.
Woodland Hills, CA 91365
(818) 887-8000

In 1985, Dataproducts Corp. revenues dropped by nearly $110 million from the previous year as original equipment manufacturers trimmed their inventories to cope with the computer slump. In the six months between the end of its fiscal year on March 30, 1985, to the end of September, the Woodland Hills, Calif., supplier of computer printers lost more than $33 million.

By the end of 1985, it had managed to trim operations enough to eke out a $1 million fourth-quarter profit, but its backlog of orders was only $110 million, compared to $150 million a year ago.

So the company fired its president. Charles A. Dickinson, 61, who had been president five years when he was discharged in April, admitting he hadn't recognized the severity of the downturn in time to take action. Graham Tyson, chairman and a cofounder of Dataproducts, reclaimed the presidency and immediately launched a belt tightening that closed two plants in California and one in Puerto Rico and laid off 2,000 employees. A new chairman and ceo was also named: Jack Davis, formerly a senior vice president at Harris Corp.

The company increased its research and development spending slightly (to $32 million in its fiscal year 1985 from $28 million the year before) and announced new laser printer products, the LZR 2650 and 2655 programmable nonimpact printers, and the LZR-1230, which prints 12 pages a minute and is priced at $3,495. It also brought out new models of its dot matrix and line-band printers.

Dataproducts, formed in 1962, has concentrated on printers for original equipment computer manufacturers, but in recent years has also sold its products through storefront dealers, distributors, and value-added resellers.

64
TEKTRONIX INC.

14150 S.W. Karl Braun Dr.
Beaverton, OR 97077
(503) 627-7111

"If you have read recent financial reports of other electronics companies, you may be prepared for ours," says the 1985 annual report of Tektronix Inc. Known for sprinkling its accounting to stockholders with dashes of wry humor, it adds, "Dour economists hint of a 'possible recession.' That makes us wonder idly what they call the year we just completed."

But Tektronix did better than some of its competitors. Sales were up, but by only a fraction, to $1.43 billion over 1984's $1.42 billion. Profits of $92.7 million, however, were down 25% from the year before. DATAMATION estimates that dp revenues were off 5% for the year, dropping to $366.9 million.

The bad news started in the second half of 1985. In the last two quarters of the year, the company's sales dropped by $151.7 million from the first two quarters of 1985. Despite this poor performance in the second half, there were signs toward year-end of a recovery: the company's continued investments in research and development, product introductions, and acquisitions were apparently paying off, especially in its design automation and information display product categories. R&D spending reached a record $201 million last year, $32 million over the previous year.

Tektronix introduced a new family of scientific and engineering workstations, called the 6000 series, which will enable users to design and simulate complex circuit layouts. Its first model, the 6130 intelligent graphics workstation, is designed for engineering data analysis, software development, and computer aided engineering functions. The more powerful model 6205 adds computer aided design facilities.

Tektronix added capabilities to its artificial intelligence applications development workstation, the model 4404, with the August debut of the 4405 and 4406 models, and it introduced its own version of the AI language Lisp, called Tek Common Lisp.

The usually conservative, engineering-oriented company made a noisy splash at a design automation show in Las Vegas when it showed off design and test products of its most recent acquisition, CAE Systems Inc., Sunnyvale, Calif. "To longtime Tek watchers . . . [it] might have been like seeing Grandpa break-dancing," quipped the annual report's account of the affair.

Tektronix was formed in 1946 to produce the oscilloscope and still is the world's largest producer of the product, which accounts for nearly a third of Tektronix sales. That and other instrument products account for 43% of the company's total sales. Design automation and information display products make up 39% and communications products 18%.

65
BASF

Carl-Boschstr. 38
D-6700 Ludwigshafen, West Germany
(49-621) 601

German chemical giant BASF bubbled with pride at the end of last year when its dp business broke through the billion deutschmark barrier. BASF Data Technology pulled

in revenues of $357.1 million (DM1.05 billion) in 1985, a 19.7% increase in local currency.

That billion-mark business, three quarters of which came from Europe, represents three main product lines—peripherals and magnetic media and plug-compatible systems based on Hitachi mainframes. The company reports it currently has an installed base of 23,000 peripherals and 400 mainframes.

To keep its mainframe wares competitive, BASF announced two new mainframe models last year. Hitachi systems that match the IBM 3090/200 and IBM 3090/400 were introduced as the BASF 7/90-2 and the BASF 7/90-4. Deliveries on those machines are scheduled to begin this summer. Fellow German dp company Nixdorf, which decided to upgrade its installed base of 8890s using low-end Hitachi mainframes, signed a deal in '85 with BASF to buy some 600 machines over the next five years.

Back on the product front, BASF added punch to its peripheral wares by unveiling the 6485 disk storage system. Compatible with the IBM 3380-E, the 6485 has a 5GB capacity and an average access time of 17 milliseconds. As the inventor of magnetic tape, BASF has always regarded storage media as a mainstay of its business and last year was no exception. In 1985 BASF became the first company to provide chromium dioxide tape cassettes for the IBM 3840 drives. It also signed a deal with DEC for joint work on disk storage technologies. This year the company's R&D budget has been increased by 20%, much of those funds being used to develop optical storage techniques for future products.

While those new technologies are being studied, BASF Data Technology will also be gearing up to meet its 1988 revenue target of DM1.5 billion. The company hopes to achieve that goal by developing enhancements to its mainframes and by marketing new peripherals along the lines of the 6890 laser printer that debuted at this year's Hannover Fair.

66 MANNESMANN AG

Mannesmann Ufer
4000 Dusseldorf 1, West Germany
(49-211) 8201

The dp business of the Black Forest-based Mannesmann group is not quite out of the woods, despite revenues of $355.7 million (DM1.04 billion) in 1985. (Total corporate revenues were $448.1 million, or DM1.3 billion in local currency.) Last year the company's dp subsidiaries showed only an 8% increase in revenues in local currency, compared with a 21% jump in 1984.

Mannesmann puts most of the blame for its bland performance on sluggish printer sales, which grew a scant 2% in 1985. In 1984 those printer sales had soared an impressive 35%. The printer operation trades as Mannesmann Tally; while this part of the company recorded a 23% revenue growth in Europe during 1985, the poor performance resulted from a contraction of business overseas.

There was healthier growth on the hardware and systems software side, where revenues from Mannesmann Kienzle Data Systems were up 18%. Some of those gains can be attributed to its 9000 series of small systems. Last year the company signed up its 10,000th user of the 9000 and unveiled new entry-level models in the series.

Mannesmann's export trade for its mainstream dp products also picked up in 1985. Sales in the West German home market rose 13%, compared with an overall export increase of 26%. France, Britain, and the Benelux countries are the strongest foreign markets for the company.

Last year the Mannesmann Kienzle subsidiary strengthened its position as a dp supplier to small- and medium-sized firms by setting up new subsidiaries. In an effort to expand its European business, Kienzle created a new company last year to specialize in systems for gas stations and distributors. More vertical market spin-offs are expected this year. The West German firm also formed its own software house in Dusseldorf last year. Mannesmann Kienzle Software, which will develop products for Kienzle's own machines, could be used as a corporate stepping-stone into broader markets.

The expansion strategy also affected Kienzle's third-party maintenance business, which the company believes to be a future gold mine. Since the beginning of 1985, Kienzle has offered maintenance service across Europe, promising spare parts delivery within 24 hours in any major city. The company has some 1,300 engineers on its books and runs the service mainly from the U.K. This expansion requires people: in 1985, the company hired 250 more people to help handle the increased business. Still, Mannesmann kept tight reins on productivity during the hiring, and average revenue per head increased by 9% during the year.

This year the focus is on strengthening Kienzle's export business, which accounted for 59% of 1985 dp revenues. Kienzle has put special emphasis on the U.S. market. This strategy, the company hopes, will help it to beef up sales of all its dp operations, smoothing out its erratic revenue performance over the last few years.

67 ZENITH ELECTRONICS CORP.

1000 Milwaukee Ave.
Glenview, IL 60025
(312) 391-7000

Zenith Electronics Corp., the huge television manufacturer, lost $7.7 million last year when it became involved in a television price war, but its computer operation had a spectacular year. And as the new year got under way, a flood of government orders ensured even better faring in 1986 for its Zenith Data Systems subsidiary.

The corporation attributed its 1985 loss to price competition in consumer electronics from the Far East, notably Korea and Taiwan, which brought its sales down to $1.62 billion from $1.72 billion the year before. Its loss of $7.7 million contrasted with a $63.6 million profit a year earlier. Spurred by the introduction of five new models, Zenith Data Systems sales soared 41.3% last year to reach $352 million, compared with $294 million in 1984.

Last year it introduced three IBM-compatible desktop computers—the Z-200 Advanced PC, which is compatible with IBM's PC AT; the Z-158, a faster version of an earlier model; and the Z-148, an entry level desktop system for both consumer and business use. It also brought out two portable computers, the Z-171 battery-operated system, which has dual 5¼-inch floppy disks, a liquid crystal display, and weighs less than 15 lbs.; and the Z-138, a heavier 24-lb. system.

This spring, Zenith began delivering the first of up to 18,000 Z-171s to the Internal Revenue Service, under a highly visible procurement that pitted Zenith against a field of 12 vendors, including IBM. According to trade press reports, IBM had been favored in the bidding with its then unannounced product, later introduced as the Convertible. The order, valued at $27 million, will be filled over a one-year period and service and support will run through 1995. A much larger order, for 90,000 of Zenith's Z-200 systems, was awarded at the same time by the Air Force. It was valued at between $200 million and $500 million.

Although the company has achieved much of its success through these big-ticket contracts to the military and government, late last year it began to step up its sales to its top 500 business accounts by offering more incentives for local dealer support of its direct sales force.

Although microcomputer prices are falling—and the company expects them to continue to fall—Zenith feels it will be ready, having played a price-cutting game in the television market that makes falling micro prices look tame. In a recent interview, marketing vice president John Frank said, "Other companies look at ways to cut the $30 parts; we look at ways to cut the 40 cent parts." Evidently, its customers like it that way.

68 ARTHUR ANDERSEN & CO.

69 West Washington St.
Chicago, IL 60602
(312) 580-0069

Companies whose primary business is money are recasting their balance sheets and public images. No longer are they banks,

insurance companies, and accountants: nowadays, they are "information" companies. Because dp allows and encourages the integration of services, the future will only make it harder to determine what's pure dp and what isn't, particularly when it comes to computer services.

Take Arthur Andersen, the Big Eight accounting firm. When businesses first began using computers in the 1950s, the accountants were placed in charge. Therefore, it is not surprising that Arthur Andersen & Co. derives a considerable amount of revenues from helping clients work with computers.

Arthur Andersen attributes a third of its 1985 revenues, or $477 million, to billing clients for management information consulting. (The company's accounting and audit work produced revenues of $767 million, and $329 million was from tax consulting). The company doesn't report profits, but this year's revenues were $1.57 billion, up 13.4% from 1984, and management information consulting, which went from $391.9 million to $477.3 million, represented a 21.9% increase. The company has offices in 48 nations and in 80 cities in the U.S. The number of its employees has been rising steadily from 21,000 in 1981 to nearly 30,000 this year.

What does Arthur Andersen do for dp clients? It provides help, which, according to some independent consulting organizations, is often tied into its accounting services.

Its earliest visible job was as a consultant to General Electric Co., which built the first payroll system in 1952 on a Univac I computer in Louisville, Ky. Arthur Andersen now has some 7,000 consultants in its computer services operation who plan, design, and install computer-based information systems for clients. In that group are some 250 technical staffers who perform research on new developments ranging from artificial intelligence to office automation.

The company sells a product, called Method/1, that basically manages and designs computer-based information systems installations. Arthur Andersen has also developed two software packages, Manufacturing Planning and Control System and Distribution Control System, as well as integrated manufacturing, distribution, and financial software for IBM's System/38 computers, including FIN-PAC/38, DCS/38, and MAC-PAC/38.

69
XIDEX CORP.

2141 Landings Dr.
Mountain View, CA 94043
(408) 988-3472

Xidex is the number one producer of floppy disks in the U.S. Soon it will be tops in rigid disks as well.

Xidex was founded in 1969; 16 years later, aquisitions made 1985 the company's best year ever: revenues hit $342.1 million. The acquisition that contributed most to this affluence was that of a larger competitor, Dysan Corp. of Santa Clara. Dysan was number 81 in the DATAMATION 100 last year. But despite the big revenues, profits for the combined operation were down 29.6% to $17.8 million.

Prior to the acquisition of Dysan, maker of both rigid and floppy disks, Xidex was in only two businesses, floppies and computer microfilm. Now it is further strengthening its position in rigid disks with a pending acquisition of Charlton Associates of Irvine, Calif., a company in which Dysan was a major stockholder. Xidex announced an agreement to buy Charlton last November.

In December, Xidex agreed to acquire Trimedia, the Fremont, Calif., maker of sputtered thin-film rigid media, and it completed acquisition of the magnetic media portion of Control Data's Business Products Group. The former CDC operation manufactures and markets disk packs, computer tape, and flexible diskettes at facilities in Omaha and Lincoln, Neb., and Brynmawr, Wales.

Xidex's international sales grew to $56 million last year from $37 million in fiscal '84. A factory in Le Locle, Switzerland, produces most of Xidex's floppy disks sold overseas. In view of its tax-protected status in Switzerland, the company is exploring the possibility of manufacturing other products there.

The memory products maker has wholly owned marketing subsidiaries in 10 countries outside the U.S. and has manufacturing facilities in Ireland, Puerto Rico, and Australia, in addition to Switzerland.

Xidex is operated by a triumvirate: Lester L. Colbert Jr., chairman and president; Bert Zaccaria, executive vice president; and Gary Filler, chief financial officer. Emblematic of Xidex's lack of extravagance, the three top officers share one secretary.

70
DIEBOLD INC.

818 Mulberry Rd. S.E.
Canton, OH 44711
(216) 489-4000

"Challenging" is what Diebold president and ceo Robert W. Mahoney called 1985. Others might be less sanguine. In truth, 1985 for Diebold was, at best, difficult.

Diebold reported net sales for 1985 of $410.9 million and net income of $30.4 million, down significantly from 1984 figures of $474.1 million and $56.9 million. The company attributed the slack to conditions in the financial industry, its primary target for automated teller machines. Also cutting sales were a flurry of mergers and acquisitions, deregulation, and the shift from proprietary to shared networks for ATMs and point-of-sale terminals.

On the bright side, Diebold's overall fourth-quarter sales, in terms of orders received, were the best for the entire year.

Manufacturing backlogs also took a drubbing, standing at $87.7 million on Dec. 31, 1985, compared with $114.3 million at the same time the previous year. About $12 million of the shortfall was caused by cancellation of an order with National Transactions Systems, a Los Angeles firm that went out of business.

During 1985, between 8,000 and 8,500 ATMs were delivered overall in the U.S. market, a decline of more than 25% from the previous year. Diebold predicts, however, that the industry's merger mania will lead to bigger, healthier institutions looking for more hardware and software to bolster their delivery systems. Also driving the market are the 120 million ATM debit cards already issued to consumers.

To meet this far more positive challenge, the company introduced the 1000 Modular Delivery System family of self-service systems for the financial and retail industries, adding additional capabilities to the TABS 9000 ATM systems, the best-selling ATMs in the U.S.

The company introduced the React 1 credit authorization terminal and retail versions of the 1000 Modular Delivery System. The new devices add services designed specifically for retailing, mass merchandising, and the travel/hotel market. Diebold is attempting to interest department stores in using the 1050 Interactive Video System—a part of the React 1 family—as a "store within a store," augmenting or replacing the catalog desk. The system incorporates laser disk, touch screen, and pc technologies and automates a variety of traditional sales and services functions.

71
SANDERS ASSOCIATES INC.

Daniel Webster Highway S.
Nashua, NH 03061-0868
(603) 885-4321

Difficulties with its defense electronics business and the slump in the computer industry gave Sanders Associates a mediocre year. Revenues dropped by nearly 13% to $783.8 million. While computer-related revenues rose 24% to $323.4 million, the increase didn't meet company expectations. Most of the increase was due to a sharp rise in the company's maintenance and repair service income, which soared to $23.4 million, compared to $5.8 million the year before.

Sanders had no trouble getting defense contracts last year, just in carrying them out. Production problems arose with products it was building for the Navy and Air Force, and inventory problems held up another Air Force order as well. Too, the military is putting the squeeze on profit margins of suppliers. Profits fell 61% on Sanders' military business in the fiscal year that ended July 26, 1985, and the business

hasn't yet turned around.

Meanwhile, there was stiff competition in the computer graphics business conducted by Sanders' subsidiary, the CalComp Group. But the business was paced by a 40% increase in shipments of plotter devices—nearly 6,000 went out the door—and the popularity of the company's newest model, the 1040 pen plotter, aimed at the microcomputer-based, computer aided design market.

The company introduced a new graphics workstation, the Vistagraphic 4500MV, designed for use with DEC's MicroVAX II. It was the third member of a family of products it sells to oems, the largest of which, IBM, last year accounted for $141.7 million of the company's sales.

Last year CalComp acquired the architectural, engineering, and construction division of P-CAD, a manufacturer of computer aided design software for personal computers, at a price of $7.5 million. CalComp also acquired, for $5.5 million, Terak Corp. of Scottsdale, Ariz., a maker of color graphics displays and workstations. It also bought Image Resource Corp. of Westlake, Calif., for $3.4 million, to get a toehold in the market of high-resolution, color business presentation graphics.

During the year, Sanders Associates stepped up its R&D spending by 2%, to 5%. The company maintains that this increased spending, together with strategic acquisitions, will enable it to weather an expected falloff in IBM purchases of Sanders' graphics products.

72
SHARED MEDICAL SYSTEMS CORP.

51 Valley Stream Pkwy.
Malvern, PA 19355
(215) 296-6300

In 1984, changes in the hospital industry had worked to SMS's advantage. Limited reimbursements had made hospitals more aware of costs than ever before. The demand for information systems had increased dramatically, and business for SMS had boomed. These same changes made life a little more difficult in the first quarter of 1985: SMS experienced a slowing in the rate of new customers and lowered usage of remote services. A long streak of consecutive quarterly earnings-per-share improvement came to an end. Nevertheless, revenues were up 22% from 1984 to $312.2 million, and profits were up 23% to $41.7 million.

By year-end things looked brighter and SMS was doing so well that Morgan Stanley included it in the investment firm's model portfolio. Analysts at Morgan Stanley attribute SMS's success to its large, recurring revenue stream, unbundled product support of IBM configurations, and increasingly aggressive marketing strategy.

Although actual processing per patient is on the rise, declining occupancy levels and shorter patient stays restrict the amount of processing that hospitals can do through remote services. SMS responded by beefing up its product line with more on-site and turnkey products.

In March, SMS acquired Computer Synergy Inc., a small West Coast-based vendor of turnkey financial systems that operate on DEC VAX superminicomputers. SMS and CSI merged their DEC-based software systems to create a new turnkey product, called Spirit, which provides small and midsized hospitals with an integrated financial and patient care system based on a single technology.

Other applications SMS introduced this year include products for nurse staffing, nursing care plans, cost accounting, advanced materials management, scheduling, and a new IBM-based pharmacy system. SMS continues to do business overseas through its affiliate SMS International, which provides services to hospitals in the United Kingdom, Ireland, the Netherlands, Spain, Japan, and West Germany.

73
M/A-COM INC.

7 New England Executive Park
Burlington, MA 01803
(617) 272-9600

High flying M/A-COM inched closer to the $1 billion sales barrier in 1985, but ended the year under a cloud. Profits began to plunge in the second half of the year as trouble brewed in several major markets. While revenues were up 7.6% to $855.2 million from 1984's $794.3 million, net income dipped 18.3% to $32.6 million from $39.9 million. Dp revenues were up 22.1%, rising to $305.4 million last year from 1984's $250 million. But worse could be in store this year. The company was predicting a $55 million loss in the first quarter of 1986 and now plans to discontinue some of its operations. It seems inevitable that this widely diversified communications company will undergo a major restructuring in 1986 in an effort to control costs.

M/A-COM has invested heavily in some markets, such as scramblers and unscramblers for pay television companies, that won't become profitable until 1987. The company has won big contracts in the satellite communications area that also won't bear fruit for a number of years.

M/A-COM has other problems. Various constraints have led the federal government and its military contractors to delay buying equipment. U.S. semiconductor companies have been hit hard by the Japanese and are buying less from M/A-COM's microwave components operation. The company's backyard satellite earth station business has declined due to increased competition, creating problems of overcapacity. And in its data communications division, sales to U.S. telecommunications companies have slowed because of the increasingly widespread use of fiber optics.

Several other businesses acquired during M/A-COM's aggressive expansion program of the past six years have been slow to develop, and here, too, the company is looking at whether assets should be downvalued.

74
APOLLO COMPUTER INC.

330 Billerica Rd.
Chelmsford, MA 01824
(617) 256-6600

Two years ago Apollo Computer brought in professional manager Thomas Vanderslice, a veteran of top jobs with both General Electric and GTE, to manage the company's dizzying growth as a supplier of computer workstations. In six years, Apollo's revenues have gone from zero to $295.6 million in 1985.

But 1985 turned out to be a year of confused direction: while the company controlled 38% of its market and reported an impressive 36.9% revenue growth, its earnings skidded into the negative column and the company posted its first loss ever, $1.5 million for the year.

Vanderslice said he'd installed an infrastructure that "could easily accommodate the kind of growth that industry watchers had projected for 1985." But growth failed to meet his expectations: many customers weren't buying at all; others deferred purchases, awaiting new products from Digital Equipment Corp. and IBM.

Most of Apollo's revenue growth occurred in the first half, before IBM and DEC released their own workstation products. Apollo revenues dropped nearly 7% in its fourth quarter.

The computer workstation market, which Apollo pioneered, continues to grow, however. Market research figures estimated it at $1.3 billion this year, double last year's mark. Apollo sees its best opportunity in large technical organizations where engineers use workstations to perform many kinds of jobs, such as computer aided design, software development, and experiments with artificial intelligence concepts.

Early this year the company announced replacements for its entire line of workstations. At the lower end it offered a 32-bit monochrome Series 3000 personal workstation for $9,000 and a color version priced at $14,900. At the upper end, the company began offering the DN 750 and DN 780, priced at $29,000 and $43,900 respectively. Apollo said each system offered more performance than a product announced by Digital Equipment Corp., called the VAXstation II/GPX. Apollo also brought out a high-speed computer, priced at $195,000, for use in high-speed computations in networks of its engineering workstations.

It announced an agreement with Texas

Instruments to develop software that would link Apollo's Domain (for Distributed Operating Multi-Access Interactive Network) with TI's Explorer workstation, a Lisp-based artificial intelligence processor.

75
3M

3M Center
St. Paul, MN 55144-1000
(612) 733-1110

Although data processing activity represented a mere 3.7% of giant 3M's worldwide sales of close to $8 billion, the computer slump was a significant factor in the company's disappointing results in 1985. Dp revenues were up only slightly, rising 4.9% to $295.4 million from 1984's $281.4 million. Worldwide sales of $7.8 billion represented an increase over the year before of only 1.8%; earnings dropped 9.4% to $664 million, from 1984's $733 million.

"Our results were below our long-term objectives," was the way since-retired chairman and ceo Lewis W. Lehr explained 3M's performance in a year of slow growth and adverse currency effects. These were but two factors contributing to slow growth and disappointing profits. The computer slump, intense price competition in computer diskettes, and a $50 million charge to fund a joint venture in the office products business were the key computer-related drains on income.

The joint venture was with Harris Corp. to sell and service copiers and facsimile machines through an independent company called Harris/3M Document Products, Inc. The company suffered some disappointments in the documents moving field, having dropped its electronic documents transmission system, called Whisper Exchange, only a year after it was on the market.

But it has since announced major new products, including optical media for electronic document systems and new software to facilitate the handling of office and engineering documents. It has also introduced a laser printer and reader printers that use ordinary sheets of paper.

The company says it is making "good progress" on optical recording technology, which it expects to become a billion-dollar market in the 1990s.

The company's memory technologies group again had to face tough price competition, much of it due to disappointing personal computer sales. It has made little progress on a highly touted "stretched disk," made of a flexible magnetic material stretched and bonded to a rigid substrate made of polyethermide. The result is a hybrid of a floppy and a Winchester rigid disk.

3M's new chairman and ceo is Allen F. Jacobson, 59, former president of the company's U.S. operations.

76
MITEL CORP.

350 Legget Dr.
Kanata, ONT K2K 1X3
Canada
(613) 592-2122

Take an infusion of money, a better accounting method, a new president, and a well-received new product, add them to a company that was once one of Canada's premier advanced technology companies, and what do you have? If the company is Mitel, the answer is still "wait and see."

Mitel's sales crept up last year to $294.8 million (U.S. dollars), but it still languished in the losing column. Even so, losses of $23.1 million were an improvement over 1984's $44.7 million bath. Further help may come from British Telecom, which bought 51% of the company in April 1986.

There is fierce price-cutting in the office switchboard market (PBX) at a time when research costs are soaring. Mitel also was hurt by delays in building its newest product, an integrated voice and data exchange called the SX2000. Although the machine has been well received and SX2000 sales are growing, shipments are dwarfed by such large competitors as AT&T, Northern Telecom, and Rolm Corp.

To penetrate the office automation market, Mitel needed a partner, but a brief interlude with IBM in 1984 ended when IBM opted to court Rolm instead.

When British Telecom bought a controlling interest in the company for $250 million, its first change was to name a new president, Anthony Griffiths, a former member of Mitel's board. Griffiths overhauled what financial observers have long considered to be a sloppy accounting system, and stepped up marketing of the SX2000. Part of the strategy centralized worldwide PBX operations management in the company's headquarters near Ottawa. Griffiths formed a senior management team of five executive vice presidents within the PBX division that will have worldwide responsibilities for operations, sales, and marketing, R&D, finance, and management controls.

Financial analysts think that British Telecom will beef up Mitel's R&D expenditures, which had declined by a third in the 1985 fiscal year. While BT's English distribution network may help Mitel's U.K. sales, BT acquired the Mitel interest primarily to gain a foothold in the U.S. market.

77
FERRANTI PLC

Bridge House, Park Road, Gatley
Cheadle, Cheshire SK8 4HZ, England
(44-61) 428-3644

It wasn't smooth sailing last year for electronics companies trying to navigate in the choppy British economy. But Britain's real-time specialist Ferranti managed to keep its head above water: at the end of last year, the firm recorded dp revenues of $282.1 million (£220 million), up 6% over 1984. Total corporate revenues were off 2.6% to $737.2 million (£575 million). Nevertheless, profits were up 29.9% to $38.6 million (£30.1 million).

The weak link in Ferranti's product lineup, which includes computers, telecommunications, and defense systems, has been chips. But despite the slump in semiconductors, the company, which specializes in gate arrays, has continued to plow money into production. In the dp arena last year, Ferranti unveiled the PC 850, a PC-compatible micro that chalked up $7 million in sales in its first six months on the market. Most of those sales were made in conjunction with larger control systems contracts.

Ferranti's biggest dp customers are in the oil business. For example, about 60 of the firm's Argus 1100 minis are used in the North Sea oil fields, off the British coast. These machines are also at work in the chemical, food, steel, and power industries. More recently Ferranti moved into the air traffic control market, winning a $10 million order from Swissair.

Ferranti Infographics, the company's CAD/CAM arm that opened a U.S. office in 1984, has found the going tough: it has not yet nailed a major order. Back in Britain, however, where Ferranti Infographics announced a low-end addition to its CAM-X range of systems, the company has recorded growth of 90% in sales.

Roughly 60% of Ferranti's total business is derived from the defense sector. Ferranti, as a matter of fact, is the major supplier of processor power to the British navy. Over the past 12 months, the company has won a $10 million contract to supply processors for a new class of small, British diesel submarines.

78
CONTINENTAL TELECOM INC.

245 Perimeter Center Pkwy.
Atlanta, GA 30346
(404) 391-8000

"I'm a big believer that one of the great things in life is change." These are the words of Contel president John Lemasters.

Well, the guy must be having one hell of a time. Since becoming the first Contel president to come from outside an operating company, Lemasters has replaced almost every manager in Contel's nonregulated enterprises, reorganized that nonregulated business into four sectors, and changed Contel's mind-set from complacent to competitive.

Almost all the new managers came from Harris Corp., where Lemasters worked for 26 years. He had been senior vice president and executive of Harris's Communications sector when he left the company in 1984 to

See your TeleVideo distributor.

CALIFORNIA
TELEVIDEO REGIONAL SALES OFFICES
Sunnyvale (408) 745-7760
Newport Beach (714) 476-0244
D.H. MINICOM
Los Angeles (213) 483-2400
DAVID JAMISON CARLYLE CORP.
Culver City (213) 410-9250
DIGITAL SOURCE, INC.
San Diego (619) 569-9333
DUCOMMUN DATA SYSTEMS
Cypress (714) 220-6588
EMERITUS
Fresno (800) 325-9892
KIERULFF ELECTRONICS, INC.
San Jose (408) 220-6300
LEASAMETRIC
Foster City (415) 574-4441
PREMIER SOURCE DISTRIBUTING
Irvine (714) 261-2011
RC DATA
San Jose (408) 946-3800
U.S. INSTRUMENT RENTAL
San Mateo (415) 572-6600
VIVITAR COMPUTER PRODUCTS
Santa Monica (213) 829-3672
WESTERN MICRO SYSTEMS
Mountain View (415) 964-2050

FLORIDA
GENTRY ASSOCIATES
Orlando (305) 859-7450

GEORGIA
TELEVIDEO REGIONAL SALES OFFICE
Norcross (404) 447-1231
INFOTEC, INC.
Atlanta (404) 458-1400

ILLINOIS
TELEVIDEO REGIONAL SALES OFFICE
Schaumburg (312) 397-5400
DATA ONE
Prospect Hts. (312) 520-1300
PRO COM SALES
Elk Grove Village (312) 860-1123
TEK-AIDS INDUSTRIES
Arlington Hts. (312) 870-7400
UNITED STATIONERS
Forest Park (312) 699-5000

INDIANA
NASH & ASSOCIATES
Indianapolis (317) 925-1050

MARYLAND
FEDERAL DATA CORPORATION
Rockville (301) 294-9682

MASSACHUSETTS
TELEVIDEO REGIONAL SALES OFFICE
Woburn (617) 890-3282
ARROW ELECTRONICS
Woburn (617) 938-8700
BUTLER ASSOCIATES, INC.
Newton (617) 964-5270
STRATUS COMPUTER
Marlboro (617) 460-2000

MICHIGAN
MIDCOM COMMUNICATIONS
Southfield (313) 353-5696
STAR-TRONIC
Farmington Hills (313) 477-7586

MINNESOTA
AVNET COMPUTER TECHNOLOGIES
Eden Prairie (612) 944-1114
BENCHMARK COMPUTER SYSTEMS
Minneapolis (612) 831-2300
PC EXPRESS
Burnsville (612) 894-9153

NEW JERSEY
DATA STORE
Cherry Hill (609) 779-0200

NEW YORK
TELEVIDEO REGIONAL SALES OFFICE
Syosset (516) 496-4777
ARROW ELECTRONICS
Melville (800) 323-4373
MANCHESTER EQUIPMENT COMPANY
Hauppauge (516) 435-1199
TRANSACTION CONCEPTS, INC.
Forest Hills (718) 544-8898
TRICOM GROUP
W. Hempstead (516) 483-9700

NORTH CAROLINA
PEN-TECH SALES
Greensboro (919) 852-6000

OHIO
COMPUTER PLACE
Brooklyn Heights (216) 351-7444
E.Q.S. SYSTEMS
Chesterland (216) 729-2222
REYNOLDS & REYNOLDS
Dayton (513) 443-2264
W.C. KOEPF & ASSOCIATES
Chargin Falls (216) 247-5129

OREGON
OMEGA DATA, INC.
Hillsboro (503) 640-3995

PENNSYLVANIA
ARCH ASSOCIATES
Fernwood (215) 284-0327

TEXAS
TELEVIDEO REGIONAL SALES OFFICE
Irving (214) 550-1060
CARTERFONE COMMUNICATIONS
Dallas (214) 630-9700
INTERPRINT, INC.
Austin (800) 637-0600
INTERPRINT, INC.
Houston (713) 465-0580
INTERPRINT, INC.
Plano (800) 527-5113
MICRO SOURCE OF TEXAS
Richardson (214) 690-5111
US DATA CORPORATION
Richardson (214) 680-9700

WASHINGTON
DATEC, INC.
Seattle (206) 575-1470
DYNAMIC SYSTEMS NORTHWEST
Mukilteo (206) 745-5311

VIRGINIA
MARVA DATA SERVICES
Falls Church (703) 893-1544

CANADA
ARROW ELECTRONICS CANADA LIMITED
Montreal, Quebec (514) 735-5511
COMPUTER DISTRIBUTION, INC.
N. Vancouver, BC (604) 984-0641
DATAMEX, LIMITED
Montreal, Quebec (514) 355-4923

TeleVideo®
Settle for more.

head American Satellite Co., a joint venture between Contel and Fairchild Industries. Lemasters tapped his former firm for six new Contel executives in the last six months of 1985.

They became the main men in Contel's four divisions. Business Systems provides voice communications and data processing products and services for small- to medium-sized business customers. Federal Systems builds telecommunications and dp systems for U.S. and foreign governments. Information Systems serves private sector customers who need complex telecommunications and dp systems and services. Telephone Operations is still the foundation, with 2.2 million customers in 31 states; its revenues are the tenth largest in the industry.

Consolidated net income leaped 23% to $240 million from $195 million in 1984. Revenues rose only 6% to $2.56 billion from $2.40 billion. Net income was somewhat skewed by the sale of Mast Advertising and Publishing, Contel's directory business, to Southwestern Bell for $120 million. The total gain was $41.6 million.

Contel disposed of two other activities that Lemasters told a group of analysts did not "fit into the long-term future" of his company. National Bancard Corp., Contel's credit card clearing company, was sold to that company's management. STSC, a software operation originally bought as a timesharing company, was also sold to its own management.

The company wasn't only in a selling mode. It acquired Fairchild's portion of American Satellite and Space Communications Company (Spacecom). It also launched a new subsidiary, Contel Tenant Services Inc. (CTSI). CTSI will design, market, install, and manage shared-tenant services facilities nationwide.

79 BOEING COMPANY

7755 East Marginal Way S.
Seattle, WA 98108
(206) 655-2121

Data processing accounts for less than 3% of Boeing Co.'s total revenues. So while the company as a whole had record sales of $13.6 billion, with earnings of $566 million, DATAMATION estimates that Boeing's dp business was up only 3.8% to $270 million.

Along with a newly formed Boeing Electronics company, which consolidates the manufacture of digital controllers, processors, data buses and automated test systems for use internally and to some commercial and government customers, Boeing Computer Services Co. (BCS) is Boeing's sole source of data processing revenue.

Last year, Boeing reorganized the BCS operation into two organizations, one that aims at government customers and the other at commercial customers. The commercial operation, called Commercial Infor-

IS THIS A PROJECT HEADED FOR TROUBLE?

You don't know. What you see looks fine. It's what you don't see that's the problem.

Example: A key supplier is closing its doors. A new source has to be found. Deliveries will be delayed and costs will increase.

With the limited visibility of the above graphics, it could be weeks before the impact is displayed. There will be long delays in the schedule and cost overruns. The project is in real trouble!

This situation could have been avoided with VIS1ON...a powerful, comprehensive, easy-to-use project management system.

Using VIS1ON, the project's schedule and costs can be updated as soon as events occur. You actually see what effect they have on your project tomorrow, next week, next month.

VIS1ON also provides you with a powerful "What If" capability that helps you analyze problems and find solutions.

VIS1ON helps management see behind the lines and into the future. That's why so many of the Fortune 1000 companies depend on VIS1ON to help keep their projects on time and within budget.

Find out how VIS1ON can help keep your project out of trouble. Call or send for more information today!

VIS1ON is available on DEC VAX and PR1ME minicomputers.
VIS1ONmicro now available on IBM® PC.

Now available on IBM mainframe

SYSTONETICS

801 E. Chapman Ave., Fullerton, CA 92631 • (714) 680-0910 • Telex 692-327

DOMESTIC OFFICES: Fullerton, CA (714) 680-0910 • San Jose, CA (408) 275-0890 • Seattle, WA (206) 455-3374 • Denver, CO (303) 740-6681 • Houston, TX (713) 461-3905 • Atlanta, GA (404) 955-7740 • Oakton, VA (703) 359-2982

INTERNATIONAL AGENTS: EURO/LOG HOUSE, 25 High Street, Rickmansworth, Herts WD3 1DF, United Kingdom, Phone 923-777007, Telex: 917099 • Software Solutions Pty, Ltd., 5 Alexander Street, Crows Nest, New South Wales, Australia 2065, Phone: 2-439-3055, Telex: AA72618 • Optiim Scandinavia A.S., Lumberveien 13, P.O. Box 210, N-4620 Vagsbygd, Norway. Phone: 47-42-14200. Telex: 21603.

IBM is a trademark of International Business Machines Corporation

CIRCLE 94 ON READER CARD

Your family's savings program is unique. You have different needs. And different concerns. That's why so many families have made U.S. Savings Bonds their family bond. It's the bond that holds a family's savings program together.

That's because bonds offer so many guarantees. Guarantees that are just right for any family. Like guaranteed interest return. Guaranteed tax benefits. Guaranteed safety. And all backed by the most solid guarantee of all. America.

So, when you're looking for that bond as unique as your savings needs, look to U.S. Savings Bonds. They really are the Family Bond.

Take stock in America.

UNITED STATES SAVINGS BONDS

mation Systems, is aiming its professional and technology resources at the energy and manufacturing markets. BCS also trimmed some operations, reducing the number of sales field offices to 10.

This year BCS began developing AI workstations for software engineers, an effort that the company says could increase productivity threefold. BCS also signed on with GM's Technical and Office Protocols (TOP), the automaker's big move for office automation standards.

Boeing Electronics is deeply involved in microelectronics R&D and last year joined the Microelectronics and Computer Technology Corp., Admiral Bobby Inman's Austin, Texas, consortium that does advanced research in advanced microelectronics technology.

80
GOULD INC.

10 Gould Center
Rolling Meadows, IL 60008
(312) 640-4000

The big news over in Rolling Meadows is not much news to the rest of the world: Gould survived the year, and it didn't merge. After hoping that 1985 would show the positive results of an ambitious five-year overhaul, management must have been pretty disappointed with the year. Revenues of $1.4 billion were up a meager 1.5% from the year before. Income suffered, due mainly to discontinued operations, sinking to a $175.7 million loss from a $17.8 million profit the year previous. After playing footsie with Siemens of West Germany, Gould agreed only to a deal for a joint telecom equipment venture, to begin this year.

The bright spot was dp revenues, which jumped another 20% last year, to $269.4 million from $224.5 million the year before. The Information Systems segment, responsible for the line of 32-bit superminis, outperformed all the other Gould units. The company received a $50 million, four-year contract for 103 Unix-based PowerNode systems for use by the Defense Logistics Agency; and it introduced three new supermini models and software, and several new image processing products.

As Gould sold off the last of its nonelectronic businesses, it announced a new single sales organization that combines the sales groups of the three divisions that serve the industrial automation market. The company hopes to target this market, and announced two products geared toward it: the NW 0200 MAP Gateway, designed to integrate diverse segmented manufacturing systems along MAP backbone networks; and the UTX/32 software, which is designed to allow each Gould PowerNode computer in a MAP network to serve as a full node.

Despite its much-touted streamlining and positioning itself for the future, Gould

has, so far, found 1986 to be dismal. Following the announcement of a 26% first-quarter drop in earnings, chairman and ceo William T. Ylvisaker reportedly was considering resigning.

81
TANDON CORP.

20320 Prairie St.
Chatsworth, CA 91311
(818) 993-6644

Tandon Corp.'s unique double-sided disk drives for micros made it wildly successful until Japanese and Korean firms decided the company's turf looked attractive. Sales plummeted last year, Tandon went before the International Trade Commission, charging patent infringement, and, when 1985 drew to a close, the numbers showed Tandon had been very badly wounded indeed. Net sales for fiscal 1985 were $268.8 million compared with $398.5 million the previous year. For fiscal 1985, following tax credits of some $31 million, the company had a net loss of $135.4 million. This compared with net income of $29.4 million in 1984.

Tandon went into the offensive early in the year, charging almost two dozen Japanese and Korean firms and their subsidiaries with poaching upon its patented technology and then deliberately undercutting Tandon's prices. "They're simply not playing on a level field," is how Ranjit Sitlani, vice president of the firm, put it after he unleashed a battery of lawyers on the opposition. Some quick, out-of-court settlements helped. Without admitting liability, the Sony Corp. and Teac Corp. coughed up undisclosed cash settlements and additional monies for licensing fees. Mitsubishi Electric Corp. refused to cut a deal, however, and the International Trade Commission in Washington, D.C., eventually ruled in that vendor's favor. Still left simmering are a number of separate civil suits which may come to fruition in a year or so.

Perhaps with one eye to the future, Tandon began to diversify on grounds that the disk drive market—double-sided or conventional, hard or floppy—was no longer bringing in high profits to anybody. The firm announced a $300, three-year deal with two unspecified firms to oem micros and assorted disk products.

Here, Tandon will develop a family of XT- and AT-compatible workstations using Intel 80286 chips. Other new products included the card-mounted, plug-in Diskard, to be sold through retail outlets and offering 21.3MB of formatted capacity for IBM PCs, XTs, or other compatible micros.

The company also brought in some new faces. Dan H. Wilkie, who headed IBM's micro facility in Boca Raton, Fla., was named Tandon's ceo. Earlier, the company hired H.L. Sparks, author of IBM's PC marketing strategy, to become Tandon's vice president of sales and marketing. Charles Paddle, formerly chairman of Victor Technologies, was hired to expand Tandon's European operations.

As the year drew to a close, it became apparent to many that its disk drive operations would account for no more than one third of Tandon's future efforts. Steven L. Ossad of L.F. Rothschild, Unterberg, Towbin, the company's investment banker in New York, speculated that his client will be soon building its own Tandon-label micro for sale to both the public and office markets, a strategy not without high risks of its own.

82
NBI INC.

3450 Mitchell Lane
Boulder, CO 80301
(303) 444-5710

NBI began 1985 with promising news. An announcement in January of a proposed $162.7 million acquisition of Computer Consoles Inc., a Rochester, N.Y., supplier of office computer and telephone systems, had the *Wall Street Journal* mentioning NBI in the same breath with "such second-tier office automation companies" as Data General and DEC. Less than a month later, however, the proposed acquisition was off, with NBI citing differences between the two firms "ranging from strategy and philosophy to operations."

After the deal fell through, the reasons for NBI's interest remained. The 12-year-old company has had trouble matching the success of its standalone word processors in the newer market for the integrated office systems, and as a result its financial performance has been spotty. After rebounding in 1984 from disappointing profits reported in 1983, NBI's 1985 earnings dropped 45% to $7.9 million on revenues of $260.7 million.

Wall Street had viewed the proposed acquisition of Computer Consoles as an indication that NBI sought to boost its expertise in high-end office systems, but apparently NBI chairman and founder Tom Kavanagh has other plans for repositioning the company. In June, NBI completed the acquisition of a West Coast distributor of office supplies, Seattle, Wash.-based Yukon Office Supply; it was part of a continuing strategy Kavanagh has described as "balancing the more volatile computer business with more stable and predictable revenues from office supplies."

Analysts seem to view NBI's moves in the office supply field favorably while questioning how paper clips fit into the company's product line. In the high-tech arena, NBI's direct-sales force, which numbers nearly 200 in over 40 offices in the U.S. and Canada, is considered a valuable asset.

Additions to NBI's product line last year included various controllers and links that enhance the OASys line of office automation systems and a new system for electronic publishing. Sales of NBI's high-end systems continue to be soft, however, and in the first quarter of fiscal 1986 the company reported larger than expected losses for its Integrated Solutions subsidiary, which markets engineering workstations.

Meanwhile, at last November's annual meeting, shareholders approved two anti-takeover measures. According to NBI spokesman Jesse Simmons, no takeover offers have been tendered for the company.

83
PERKIN-ELMER CORP.

761 Main Ave.
Norwalk, CT 06859
(203) 762-1000

This diversified technology company continued its attempts to expand its share of the superminicomputer market. The company tried to give its Data Systems Group greater clout in the market—and with investors—by spinning off the Holmdel, N.J.-based minicomputer operation as a partially owned subsidiary.

The new company, Concurrent Computer Corp., is managed by the same executives as before, but has sold about 17% of its stock to outside investors; the managers themselves purchased a 1% stake. Perkin-Elmer controls the other 82%. DATAMATION estimates Concurrent had 1985 revenues of $259 million, which was 11% over the division's 1984 performance.

Concurrent's major markets remain the same: aerospace and defense, training simulation, health services, manufacturing, financial services, and the mining and petroleum industries. The company reorganized its marketing into two broad categories–real-time and transaction processing.

Meanwhile, it added several new models to its 3200MPS family of 32-bit computers. The introduction of models 3230, 3260, and 3280 rounded out the product line from bottom to top. Also, enhanced Reliance transaction processing software was brought out to help move the machines into commercial markets.

As the name Concurrent implies, the company's computers are multiprocessing computers that segment tasks for execution on different processors. The company bills itself as a leader in the as yet unsettled area of parallel processing.

James K. Sims, former group executive of Data Systems, was elected senior vice president and later named president and ceo of the new Concurrent.

84
MAI BASIC FOUR INC.

14101 Myford Rd.
Tustin, CA 92680
(714) 731-5100

MAI Basic Four returned from the dead in 1985. After being caught up in a vicious proxy fight over ownership during 1984,

Management Assistance Inc. sold the MAI Basic Four arm of its company to Bennett S. LeBow, a private investor. The sale ended one of the bitterest takeover battles on record.

The "new" MAI Basic Four reports that it conducted no significant business activity during 1984, and therefore no comparable results are available. The results for 1985 put the company firmly in the black with net income of $8.2 million on revenues of $252.8 million. These earnings are truly remarkable, considering that under Management Assistance Inc. they were a sickly $1 million in 1984.

MAI Basic Four indeed has a new lease on life, having moved operations from New York City to California. The company's products—the MAI 2000, a 16-bit multiuser micro, and the 32-bit MAI 8000 multiprocessor supermini—are new from top to bottom.

Basic Four was a pioneer in the small business market and has an installed base of over 30,000 units. During 1985, MAI Basic Four sold $84.3 million in minicomputers and was helped considerably by $106.7 million in sales of peripherals. Maintenance and repair, which was once handled by Sorbus, is now in-house, producing revenues of $38.2 million during the year.

85
PARADYNE CORP.

8550 Ulmerton Rd.
Largo, FL 33540
(813) 530-2000

Call it the year of living dangerously. Just when this communication network supplier thought it had made peace with the government, the parties were at war again.

The campaign apparently took its toll on Paradyne's balance sheet. Revenues fell 13%, from $298.9 million to $252.5 million. But that was an upper compared with net income. That item plunged 383%, from a profit of $11 million in 1984 to a loss of $31.1 million in 1985.

Paradyne and the Securities and Exchange Commission (SEC) waved white flags in September, ending the legal skirmishing that had begun in 1983 when the SEC sued Paradyne for "fraud and deceit" concerning the company's $100-million 1981 contract with the Social Security Administration (SSA). The contract was the largest awarded by the SSA and the largest won by Paradyne. The settlement came the day before the suit was scheduled to go to trial.

But there were more tribulations for Paradyne. Chairman Robert Wiggins and seven other company executives were charged in December with fraud in a 14-count indictment stemming from the same case. Shortly thereafter, Jerry Kendall and Fred Melberg, neither of whom were indicted, were named executive vice president and chief operating officer, and executive vice president and chief staff officer, respectively.

After the indictment the Department of Health and Human Services barred Paradyne from receiving any further federal government business for 12 months or until there is a verdict in the fraud trial. And while the SEC may be history, a class action suit brought following the SEC's complaint is still pending.

Ironically, the suspension doesn't affect Paradyne's current government business, which accounts for about 10% of the company's overall revenues, the SSA contributing half of that figure. And the SSA had already renewed a $12.4 million contract with Paradyne for support of its installed terminals in 1986.

"It's difficult to put our arms around how much this has cost us in getting new business," director of corporate communications Miriam Frazer says. In legal fees, the disagreement has cost Paradyne $6.5 million over three years.

"It certainly made it more difficult to initiate new accounts," Frazer says. "But we did get 80% repeat business."

The outlook for 1986 is, not surprisingly, more positive. Analysts estimate revenues of $285 million, which would return the company to near-prelitigation levels.

"The integrity of the company is critical, and we're going to fight for it," Frazer promises. "It's the right thing for the company and the shareholders. Even if indicted people are removed, the company will go on."

86
PLESSEY CO. PLC

Vicarage Lane, Ilford
Essex, 1G1 4AQ, England
(44-1) 478-3040

Plessey lost a $7 billion contract and gained a $1.7 billion suitor in short order last year. The lost business, for a U.S. Army battlefield communications system, sparked off debate about the special relationship between Britain and the U.S., while the suitor, General Electric Co. plc (GEC), failed to spark anything but animosity.

It was a difficult year in dp for Plessey: DATAMATION estimates dp revenues fell 14% to $250 million (£195 million). A lot of the bad news came from Plessey's ailing peripherals division, which continued to pile up losses for the fourth consecutive year. Things weren't much better on the telecom side. The company's flagship product, the System X digital exchange, has yet to pay off for Plessey. Beset by software snafus and sluggish orders from British Telecom, the switch should do better this year now that BT purchases are picking up. Another piece of good news last year was a joint field trial of PBX equipment with South Central Bell.

Across the Atlantic, things are still looking down at Plessey's U.S. subsidiary, Stromberg-Carlson, which continued to be a big drain on the British company's revenues and resources. Last May, Plessey announced that it would be reorganizing the troubled subsidiary and cutting staff. Stromberg-Carlson has also apparently abandoned plans to combine System X with its own DCO exchange.

Ironically, GEC, the spurned suitor, had originally worked on the System X with Plessey. Those ties obviously didn't bind Plessey, which quickly rebuffed GEC's takeover proposal in December. On the defensive, Plessey chairman Sir John Clark countered by offering to buy GEC's share in the System X exchange. GEC chairman Lord Weinstock declined. Then it looked like Racal Electronics would step in and rescue Plessey from the grasp of GEC. That step, however, was never taken and Plessey's fate now rests with the U.K. government's Monopolies & Mergers Commission, which is expected to issue a report on the sticky situation next month.

On the surface, GEC's marriage proposal to Plessey seems quite logical and practical. A merger of the two firms would create a $9.5 billion company that could marshal its resources and know-how to better compete in the worldwide defense electronics and telecommunications markets. While that kind of market potential may look promising on a global scale, the British government fears it could pose monopolistic problems on the home front.

87
CAP GEMINI SOGETI

11 rue de Tilsitt
75017 Paris, France
(33-1) 426-79757

In the year that Cap Gemini Sogeti finally let the public in on a small piece of its action, it didn't disappoint its enthusiastic new shareholders. The French software/services firm boosted net earnings by 34% in local currency to FF127 million ($14.1 million), a 19% increase in dollar revenue to $245 million.

The company's share price on France's over-the-counter market also skyrocketed, going from FF650 ($70) on June 7 to nearly FF1,400 ($180) by year-end. As a result of the popular offering on 10% of the company's capital, Cap Gemini is now valued at around $665 million. The main reason given by the company for offering 10% of its capital on the OTC market was to gain greater credibility as Europe's biggest computer services operation. What Cap Gemini hoped was that the folks in the States would sit up and take notice of the French firm.

Chairman Serge Kampf, who has a controlling interest in the company, has always attached considerable importance to foreign markets, especially America, where Cap Gemini wants to build up its business. Roughly 55% of the group's 1985 revenue

was generated outside France. The U.S., which accounted for 27% of revenues in 1984, may have pulled in a smaller share last year due to the depreciating dollar. Cap Gemini was nevertheless very active in the American arena in 1985. It captured contracts to supply two West Coast banks, Bank of America and Security Pacific National Bank, with its Multipro software engineering system.

Earlier in the year Cap Gemini acquired the consulting division of U.S. services company CGA Computer Inc., merging it with its Stateside operation Cap Gemini DASD. The new combined company, called Cap Gemini America (CGA), is expected to rake in about $130 million this year.

Back in Europe, the company bought out Standard Telephones & Cables' 49.5% interest in its British subsidiary, IAL Gemini, which was renamed CGS UK. The group's business in Europe grew last year, especially its videotex ventures. In June, the Danish PTT announced it would use the company's videotex software. Following up a similar contract in 1984 from the Norwegian PTT, the nation's biggest bank, Den Norske Creditbank, placed an order last year with Cap Gemini for banking system software. The big Dutch retail group Unigro also commissioned Cap Gemini to develop a combined dp and videotex system for centralized pricing, payment, and stock control.

Cap Gemini also did well on its home turf. The French PTT last spring awarded the company a joint contract to produce an electronic guide to the nation's numerous videotex services. Cap Gemini, which is taking part in six R&D efforts under the European Community's Esprit program, also became involved last year in another joint European research project, Eureka.

88
STERLING SOFTWARE INC.

8080 N. Central Expressway
Suite 1140
Dallas, TX 75206-1895
(214) 891-8600

At the end of 1984, Sterling Software, founded in 1981, was an $18 million-a-year company. Last August, the company catapulted into the big time with the software industry's first hostile takeover, buying Informatics General, Woodland Hills, Calif. Informatics cost Sterling $140 million. To finance it the company borrowed $100 million and issued $40 million of preferred stock.

That buy, plus the acquisition of Check Consultants Inc. (CCI) in February 1985 and Decision Systems Inc. last October, brought Sterling's 1985 revenues to $238.8 million. The firm's president, Sterling Williams, has predicted that revenues will be in the area of $260 to $270 million for fiscal 1986.

In melding Informatics into its operations, Sterling reorganized into six major groups and 20 divisions, each headed by a president and addressing specific markets in the general business areas of systems software, applications software, and computer-related professional services.

Some operations of Informatics have been taken over by a new subsidiary company, Answer Systems Inc., Woodland Hills, Calif., headed by David Saykally, a former vice president of business development for Informatics. Saykally had left Informatics in 1982 to become president of Context Management Inc., Torrance, Calif., but rejoined Informatics in early '85 as general manager of one of its software divisions.

Answer Systems' operations incurred substantial losses in 1984, but these losses were reduced in 1985 under Saykally and he has said he anticipates a return to profitability and higher revenues in fiscal 1986.

89
LOTUS DEVELOPMENT CORP.

55 Cambridge Parkway
Cambridge, MA 02142
(617) 577-8500

In 1984 Lotus's revenues had leapt 196%, and profits soared 151%, so the company's 44% gain in 1985 revenues, to $225.5 million, looked relatively modest. Even more pallid was the 6% increase in net income to $38 million from last year's $36 million. The reason: neither Symphony nor Jazz—the two most highly touted products Lotus introduced in 1984—turned out to be a hit of the magnitude of 1-2-3.

Jazz's reception was especially disappointing: the company wrote down $6 million for Jazz advertising costs that normally would have been spread out over the product's life, had it been successful. For the time being, Lotus will concentrate on offering what it calls, "value-added upgrades, enhancements, companion products, and product extensions." The company, however, says it will have "very major new products" late in 1987, when a new generation of personal computers incorporating the Intel 32-bit 80386 chip is expected to be in use. These products will include a database management system, a word processing product, and a product to improve the productivity of people working on networks of pcs. Lotus stepped up its R&D activity in 1985, spending $21.2 million, an increase of $6.4 million over 1984.

Last year the company introduced five products that were either acquired or developed in house. One was 1-2-3 Report Writer, developed by Concentric Data Systems. Another was HAL (human access language), acquired when the company bought GNP Development Corp. HAL is being offered as an enhancement to 1-2-3, permitting English commands to be typed into 1-2-3. Spotlight is a desk organizer developed by Software Arts, and Signal is a software/hardware product that receives stock market quotations via FM radio and enters them for further analysis into either Symphony or 1-2-3 spreadsheets.

Lotus released enhancements to both Symphony and 1-2-3 and added a spelling checker and text outliner to Symphony's word processing function. During the year, the company brought out Symphony Link, which connects to a mainframe by emulating an IBM 3270 terminal. It also will offer universal connectivity through a product called Link, under an agreement with its developer, InfoCenter Software Inc.

Lotus began offering nine foreign language versions of 1-2-3 and Symphony for sale in Europe and the Middle East, and in Japan, it established a new subsidiary and concluded a development partnership with Kanri Kogaku Kenkyusho Ltd., a software company.

90
ATLANTIC COMPUTERS PLC

Winchmore House
12-15 Fetter Lane
London EC4A 1BR, England
(44-1) 583-9481

A massive increase in dp revenues during 1985—up by 94% in local currency to £183.1 million ($224.4 million)—puts this British-based computer leasing company in the DATAMATION 100 for the first time.

Formed in 1975 to supply IBM computer systems and services in the U.K., Atlantic Computers now has offices in the Netherlands, West Germany, Sweden, France, and the U.S., and last year added Italy to its list of foreign subsidiaries.

The bulk of Atlantic's business is in lease sales of IBM systems, accounting for more than $170 million of its revenues last year. That was a substantial rise over 1984 when lease sales were $105 million. The company also pulled in almost $50 million from sales of equipment outright, with the remaining revenues coming from lease rentals and sales of future interests in equipment. Around 83% of its business was generated in the U.K., the rest of Europe providing 15% and the U.S., 2%. Atlantic has great hopes for its American future: during its first full year in 1985, the U.S. operation turned a small profit.

In Europe, Atlantic received orders for 12 IBM Sierras during the year and installed nine of them in the U.K. before year-end.

Meanwhile, the company branched out into DEC systems last year, acquiring one of DEC's U.K. distributors, Computer Systems Development (CSD). This addition to Atlantic's portfolio specializes in software and hardware for the manufacturing, distribution, and financial markets. It markets its software products primarily in the U.K., but has a network of 10 distributors around Europe and a U.S. operation, CSD Inc. It

RELY ON AGS.

Building an information system is a complex process. That's why AGS Management Systems has designed management and development tools to help you simplify that process. With the help of these tools you'll know what, when, and how work should be done. You'll be able to systematically prioritize, plan, organize, estimate, measure, control, and evaluate any development or maintenance project.

Our comprehensive development tools follow a methodology that lets you analyze, design and program your systems faster, with fewer errors, and throughout changing conditions and personnel. Choose the one that best suits your needs. *SDM/70™* utilizes the traditional approach in designing and building information systems. *SDM/STRUCTURED™* contains the most up-to-date structured analysis, design and programming techniques, including data modeling. *Computer-Aided Methodology™* includes development and systems management guidelines, along with automated priority ranking, estimating, and project planning systems for the IBM® PC.

Each can be combined with our mainframe project management systems, PAC II® and PAC III® for total integration.

For more information about AGS' proven solutions for effective systems development, just call or write. Business, industry, government and private organizations around the world can attest to the reliability of our development tools.

FOR THE RIGHT TOOLS TO BUILD THE RIGHT INFORMATION SYSTEMS. ON TIME.

AGS Management Systems INC.

The world's leader in project management systems

880 First Avenue
King of Prussia, PA 19406
(215) 265-1550
Telex: 510-6603320

AGS Management Systems is a division of AGS Computers, Inc.

IBM is a registered trademark of International Business Machines Corporation.

CIRCLE 60 ON READER CARD

also has a joint venture company called Orbi Software, which distributes products based on Data General machines. Atlantic's other interests include Lion Systems Developments, which produces data communications systems, Atlantic Medical, which provides computer-based medical systems, and MPL Power Systems, which supplies power modules for computers and the aviation industry.

Claiming to have been Europe's top independent supplier of IBM systems on a lease basis during 1985, Atlantic is off to a strong start for this year. But the leasing business is volatile and Atlantic is very vulnerable to changes in IBM's policy.

91
SONY CORP.

7-35 Kitashinag 6-Chome
Shinagawa-ku, Tokyo 141, Japan
(81-3) 448-2111

Sony's dp sales slipped an estimated 10% in 1985, due to falling floppy demand in the U.S. Most of the company's dp sales came from microcomputer storage devices. DATAMATION estimates that Sony's dp revenues totaled $221.8 million (¥52.8 billion), representing roughly 3.7% of the giant conglomerate's corporate revenues.

The consumer electronics conglomerate was particularly vulnerable to the U.S. micro downturn, since almost all of its floppy disk drive business is derived from oem contracts with major U.S. dp manufacturers such as Hewlett-Packard and Apple.

Nevertheless, since IBM has blessed its 3½-inch floppy disk drives, Sony still seems assured a solid niche as an oem supplier. As the industry leader in the 3.5-inch floppy market, Sony has room to price its wares competitively, maintain market share, and develop follow-on products. A high-density format developed by the giant corporation has increased disk recording capacity to 2MB, and Sony hopes that its CD-ROM hardware will become the successor to Winchester disk drives. On the micro system front, Sony produces an 8-bit machine based on the MSX standard; it has not attracted a large consumer following.

Optical disk technology is another niche market targeted by Sony. In 1985, the firm geared up to produce write-once optical disks. It also signed a deal that gave it licenses and patents for Energy Conversion Devices' write-once and erasable optical disks. Sony continued its moves into the telecom arena. Working with U.S.-based Compression Labs Inc., Sony developed a teleconferencing system for digital networks.

Last year roughly 8% of corporate revenues were plowed back into R&D. Unlike rivals Matsushita and Sharp, both of which are involved in Japanese artifical intelligence research consortia, Sony has opted to rely on its own R&D to develop dp technology for use in its consumer products.

If you know CAD, your opportunity window has just opened.

We're looking for the right individuals who want to control their own destiny by taking advantage of this opportunity to become financially secure. These individuals should be able to develop and maintain:

- A distribution network
- An efficient support system
- CAD training and seminars
- Client firm consulting

CADdy Corporation, a firm specializing in CAD software, knows that the future is shifting from mainframes to micro systems driven by desktop PCs. CADdy software is the result of precision German engineering written to drive over 30 personal computers. As the most popular software in Europe, it sets the standard for PC CAD software. CADdy is an easy-to-use, full-featured drafting and design package. Compared to current PC CAD leaders, CADdy offers software which is more sophisticated, performs in a wider range of CAD environments, *which results in a powerful marketing advantage.*

If you can see beyond working for a manufacturer, possess the drive to be your own boss, and have the determination to develop a working knowledge in five CAD areas–

ELECTRONIC ENGINEERING (PCB/Autorouting)
MECHANICAL ENGINEERING (Parametrics & NC Output)
ARCHITECTURAL (Design and Layout)
ELECTRICAL ENGINEERING (Ladder Schematics)
SURVEYING (Data Retrieval, Cartography, Topography)

–if you can see beyond the hardware world, call me and be there when we reach the top.

George E. Kloak

George Kloak
(312) 394-7755

CADdy Corporation, 3 Crossroads of Commerce, Rolling Meadows, IL 60008

CADdy

92
NORSK DATA AS

Olaf Helsetsvei 5
P.O. Box 25, Bogerud 0621
Oslo 6, Norway
(47-2) 295-400

Last year, Norwegian mini maker Norsk Data turned 18. As if to celebrate, it scored sales of $219.8 million (NOK1.8 billion), up 31.9% from the previous year, and moved into sleek new headquarters in the hills overlooking Oslo. Operating profits increased 56%. Norsk is currently operating on a profit margin of 16.5%, much higher than its U.S. rivals Digital Equipment Corp. and Prime.

Europe's fourth largest minicomputer manufacturer, Norsk derives more than half of its dp revenues from its home market. But outside Norway, business picked up last year in Sweden, Denmark, the U.K., and West Germany. In France, Norsk is hoping its joint venture with Matra Datasystems will open up that market. The company also got a crack at the Indian market in 1985 when the Electronics Corp. of India Ltd. (ECIL) awarded it an $11 million contract.

Entering the minicomputer market relatively late, Norsk learned from the mistakes of the mini pioneers. Early on, it carved out a niche, zeroing in on minis for scientific and technical applications. More recently, the company has branched out into the broader commercial world. Its Sintran III operating system, for example, has been designed to process both scientific and commercial applications. It also plunged into the office automation arena, giving Wang a run for its money.

93
NOKIA CORP.

P.O. Box 780
SF-00101 Helsinki, Finland
(35-8) 05671

With the midnight sun setting on parts of its 120-year-old forestry business, Nokia, Finland's largest privately owned industrial group, is turning to the sunrise, electronics sector to brighten up its revenues.

During 1985 Nokia's electronics division reflected the company's strongest growth with a 41% increase in sales, and dp revenues that jumped by 20.2% over those of 1984 to $217.6 million (FMK1.35 billion).

That boost was due to a series of lucrative international marketing agreements and to the strong performance of its dp operation, Nokia Information Systems (NIS), in Scandinavian markets. Still, Nokia had some setbacks, including a failed attempt to buy out the European network of Mohawk Data Sciences.

NIS is the largest part of the electronics division and has its own product range consisting of pcs, vdts, banking and POS termi-

nals. It also imports and sells computers manufactured by Honeywell, Bull, DEC, and other companies. Together with IBM, Nokia dominates the Finnish marketplace, from which NIS derives about 60% of its revenues.

In data communications Nokia has a more international presence. With 90% of the Finnish market for modems as a home base, and a growing business in other European countries, Nokia concentrated on the Far East for last year's expansion. By the end of 1985 it had made modem deals in Japan, Taiwan, Singapore, Hong Kong, and China.

Nokia also is active in the components business: its Micronas subsidiary runs the only factory in Scandinavia that manufactures LSI chips.

On the oem side, the company's Salora-Luxor subsidiary produces visual displays for some of the world's top dp suppliers, including IBM and Ericsson. Nokia contends that the screens are well received because of their ergonomic design. The company is particularly proud of its so-called positive black-on-white monitors. Nokia has also maintained its oem deal with Northern Telecom in Europe for workstations to complement NT's Vienna office systems products.

The urge to expand abroad kept Nokia executives busy for most of last year, and they even came up with a new corporate strategy coining the term "multilocal," to describe the company's new approach. But multilocal is not a new idea: it simply means making products fit customers' local needs.

94
CENTRONICS DATA COMPUTER CORP.

1 Wall St.
Hudson, NH 03051
(603) 883-0111

Despite the slowdown, Centronics made a comeback in 1985. After losing $10.4 million in 1984, the company had profits for 1985 of $648,000 on a 26% sales increase to $216 million in revenues. Centronics points to its 1982 merger agreement with Computer Peripherals as the turning point in its fortunes. (Computer Peripherals, which owns 45% of Centronics, is owned jointly by Control Data, International Computers, and NCR Corp.)

Some of Centronics' success during 1985 was due to its new products, the Horizon and GLC PC-compatible printers, and the Linewriter Series 400/800. More help came from Big Blue, which bought $65 million worth of specially configured printers from Centronics. In an effort to broaden its line of products, Centronics bought the assets of Trilog Inc. of Irvine, Calif., supplier to the fast-growing CAD and CAE market.

The Centronics 1985 annual report reveals that the company has divided itself into 15 "Quality Circles" to help management. Circles aside, the top management of Centronics was beefed up during 1985, adding a vice president of quality assurance, a new vice president of engineering, and a new vice president of operations. In early 1986, Robert Stein became president and ceo, while Thomas G. Kamp remained as chairman.

95
SEAGATE TECHNOLOGY

920 Disc Drive
Scotts Valley, CA 95066
(408) 438-6550

Competition in the disk drive business stiffened in 1985, prices plummeted, and markets dwindled. Seagate Technology, one of the most successful companies in that business, saw its revenues fall by $129 million, and it reported its first operating loss in five years, $12 million.

Only an $11 million tax benefit and income from interest gave the company a net profit of $1 million on revenue of $214.6 million, 37.6% lower than last year's $343.9 million, which had produced healthy 1984 profits of $39.3 million.

Emergence of Japanese manufacturers in the disk drive market coupled with declining sales of personal computers made it tough for disk drive manufacturers to survive, let alone make a profit. For instance, both of Seagate's two biggest customers—IBM and Hewlett-Packard—have in-house disk drive manufacturing facilities. Their suppliers live in fear of sudden cancellations of orders as their big customers consider "make or buy" alternatives: the customer has become the competitor.

Seagate's dependence on IBM waned, particularly in the latter part of 1985: in the last three months of the year IBM's business represented only 28% of Seagate's revenues of $101 million, compared with nearly half in the past. The computer giant, which accounted for $175 million of Seagate's revenues in 1984, placed orders worth only $105 million in 1985.

Bowing to price pressure, the company made a 45% reduction on the sales tag of its 1984 best-seller, the ST 412, a 12MB disk drive, and then stopped making it altogether. In addition to cutting costs, the company began making more of its disk drive components in-house. It acquired Grenex Inc., a firm that makes thin-film rigid disks—a move that, incidentally, gave Seagate an attractive tax loss carryover of nearly $9 million.

Seagate stepped up its research and development costs to $19.3 million, an increase of more than $4 million. But it also found that as it responded to industry demand for higher capacity, it was pitted against new and stiffer competition, including several large Japanese firms that have moved into the market for 3½-inch and smaller disk drives.

96
GENERAL INSTRUMENT CORP.

1775 Broadway
New York, NY 10019
(212) 207-6200

Going into 1985, things looked generally bad for General Instrument; they didn't look much better coming out. Corporate revenues of $848 million and dp revenues of $210.2 million were both down 15.4% from 1984. The company staggered under a $106.7 million loss, an astonishing 426% decrease from the year before.

But dp profitability was probably good, owing to a lively year for Sytek Inc. (51% of which is owned by GI), which doubled its revenues for the fiscal year. On the other hand, Sytek posted the big numbers thanks to its part in supplying equipment for the IBM PC Network, and GI expects those sales to be way down for the current year.

But that was it for the good news.

The Data General MV 10000-based Galaxy wagering system generated a little excitement toward the end of the year, but it soon dissipated when lottery operations in New York and California didn't buy.

Still lolling in the semiconductor and cable tv slumps, GI tried to shape itself up with a major restructuring. It took an $80 million write-off; closed a plant in Scotland and moved its entire microelectronics operation from Hicksville, N.Y., to its facility in Chandler, Ariz.; consolidated its satellite and cable television operations; sold off its interests in energy management and three quarters of its stock in Symbolics Inc.; and also sold the point-of-sale and remittance systems segments (DocuMate, CM-11, and the field service organization) of its Business Systems Division to Computer Entry Systems Corp. The idea was to focus on communications systems and computer-related products, its core businesses.

97
EASTMAN KODAK CO.

343 State St.
Rochester, NY 14650
(716) 724-2241

Eastman Kodak wrote off $494 million in 1985 after losing its patent fight with Polaroid, which drummed it out of the instant photography business. That was only one of the factors that caused the company's earnings to plunge 64% to $332 million. Revenues were up slightly at $10.63 billion, from $10.60 billion in 1984.

Verbatim, the disk manufacturer acquired by Kodak in 1984, accounts for the major portion of Kodak's data processing revenues, estimated by DATAMATION to have been $210 million in 1985.

Verbatim lost $2 million the year Kodak bought it, and the auxiliary storage market, in which Verbatim is a major player as a

supplier of disk media, remained a shambles in 1985. Change was inevitable, and Verbatim, long an innovator that charged premium prices for its technology, last year tested $25.50-a-box floppy disks for the masses, to be sold through mass merchandisers like K Mart, Sears, and Montgomery Ward.

Despite new products, Verbatim revenues still fell $9 million behind the previous year. Verbatim announced a 12MB cartridge disk built specifically to match a newly invented Kodak 12MB cartridge disk drive. The company said the combination of products will offer users the high data storage capacity and reliability of rigid disk systems with the convenience and security of removable disk systems. The Kodak drive was timed at an average access rate of 75 milliseconds and internal transfer rate of 2 megabits per second.

Verbatim also unveiled a new 3½-inch erasable read/write optical disk and disk drive system that can handle 40MB of data, aimed at the computer assisted design and office automation markets.

Revenues from Atex, Kodak's supplier of computer-based editing and production equipment to newspapers and magazines, remained flat. But Kodak's acquisition of Eikonix Corp. last year with its Designmaster 8000, a digital color editing and separation system, should help Atex sales in 1986. The company combined Atex page layout systems with the Eikonix Designmaster, offering the ability to manipulate color images electronically to fit electronic page designs created on the Atex graphics display terminal.

98
GERBER SCIENTIFIC INC.

83 Gerber Rd. West
South Windsor, CT 06074
(203) 644-1551

Gerber Scientific has prospered by automating factory procedures, beginning with a vector photo plotter that sped the design of printed circuit artwork and growing into systems for computer aided design and manufacturing (CAD/CAM).

But last year was one of near disaster in capital equipment spending: the company failed to repeat its record revenues and earnings of recent years. Revenues in 1985 slipped slightly to $207.2 million from $213.2 million the year before and earnings dropped 16.5% to $19.7 million.

Gerber is organized as a collection of four subsidiaries that develop CAD/CAM products for a variety of businesses, including aerospace, footwear, automotive, apparel, electronics, construction, printing, and sign making. Hardest hit last year was Gerber Garment Technology Inc., since the strong dollar hit the American apparel industry very hard.

Gerber Scientific Products Inc., another subsidiary, makes systems to design signs. This year it added a module aimed at the Japanese and Chinese markets. It is a large memory version that stores up to 10,000 kanji symbols.

During the year, Gerber introduced a laser plotting system that converts computer aided design data from vector to raster format for imaging on film and printed circuit boards. The company also introduced a vector plotter that does both pen plotting and precision photo plotting in the production of drawings or photo plots in aerospace, automative, shipbuilding, and cartographic industries.

99
QUOTRON SYSTEMS INC.

5454 Beethoven St.
Los Angeles, CA 90066
(213) 827-4600

Quotron Systems Inc. spent the year flirting with merger offers. With a 70% share of the U.S. market in delivering computerized stock market data, it is clearly looking for ways to parlay that into a significant piece of the broader information services industry.

Quotron last year added the first international site, London, to its data communications network, which delivers up-to-the-minute prices from 63 financial markets through nearly 80,000 terminals, mostly in the offices of exchanges, banks, and brokerages. Quotron's overseas expansion is designed to meet growing competition: from British-based Reuters Holdings PLC, which dominates the business outside the U.S.; from New York-based Telerate, which is the leading provider of quotations on investments other than in the stock market, and is broadening its services; and from Princeton, N.J.-based ADP. Yet another competitor entered the ranks when ADP acquired Bunker-Ramo Information Systems from Allied Corp.

Development costs hurt Quotron's bottom line in 1985. While last year's revenues increased 8% to $205.7 million from $189.8 million in 1984, net earnings of $22 million represented an 18% decline.

Nonetheless, the company had some cause for optimism. Quotron recently formalized a promising joint agreement with AT&T, first announced last June, to develop and market an Integrated Financial Information System. IFIS will join Quotron's network and top-of-the-line computing/display system, the Q1000, with AT&T's pc workstation and StarLAN, which will connect to a customer's telephone switch.

Quotron announced last July that its largest customer, Merrill Lynch, had extended its contract to use Quotron equipment in all its offices through November 1988. That New York brokerage, which accounts for about 25% of Quotron's revenue, also took an option to use the Quotron system through November 1989.

Merrill Lynch is developing a rival stock quote system in a joint venture with no less a partner than IBM. The day after plans for the International MarketNet (IMNET) system were announced in March 1984, the price of Quotron's stock fell more than 30%; IMNET has represented a dark cloud on Quotron's horizon ever since. Analysts viewed the news that Merrill Lynch would continue with Quotron as an indication that a challenge from IMNET would not come any time soon.

100
THORN EMI PLC

Thorn EMI House
Upper Saint Martin's Lane
London WC2H 9ED, England
(44-1) 836-2444

Even though computer-related revenues were off 41% to $205 million (£159.9 million), the biggest problem for this $4.1 billion British conglomerate was semiconductor manufacturer Inmos.

During one stretch last year, Inmos losses were running at over $2 million a month. Sir Graham Wilkins, who was brought in to replace the ousted chairman Peter Laister, was so enraged by the Inmos situation that he threatened to sue the British Technology Group that had sold the IC firm to Thorn EMI.

Wilkins decided instead to fire 25% of Inmos's 2,000-strong work force, including some top execs in the U.S. subsidiary. The company's DRAM chip operations were dropped. Inmos is now promoting its reduced instruction set microprocessor, the 32-bit Transputer, announced last fall. The Transputer has sparked interest on both sides of the Atlantic, and products based on the chip are already coming to market.

Despite problems, Thorn EMI is committed to its computer and electronics operations. Earlier this year, it reorganized its Information Technology Group under ceo Tom Mayer. The new Information Systems branch includes six units: Datasolve, Software Sciences, Thorn EMI Computer Software, Micrologic, Inmos, and Thorn Ericsson, the company's joint venture with the Swedish telecom supplier.

Thorn EMI's Information Technology division, which includes the company's software products and bureau and computer services, did far better than Inmos last year. Datasolve, which represents Thorn EMI's bureau interests, pulled off something of a coup when it signed up the Russian news agency Tass last year for its World Reporter news database.

Some of the company's other information technology operations haven't fared as well. At the end of last year, Thorn EMI Computer Software stopped distributing game and personal computer software in the U.K. Instead, it decided to concentrate on its own mainframe and minicomputer wares, which have been doing poorly in the U.S. market. ●